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FRAMEWORK FOR FINANCIAL RATIO ANALYSIS OF AUDITED FEDERAL FINANCIAL REPORTS

by

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December 1999

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13. ABSTRACT *(maximum 200 words)* Federal agencies have traditionally prepared financial reports to monitor and report the obligation and expenditure of federal funding. With the passage of the Chief Financial Officers Act of 1990, Congress called for the production of financial statements that fully disclose a federal entity's financial position and results of operations. The disclosure of this type of information, it was believed, would enable decision-makers to understand the financial implications of budgetary, policy and program issues and provide an analytical tool for obtaining a deeper understanding of a federal agency's financial condition and operations. The objective of this thesis was to develop a framework for financial ratio analysis of audited federal financial reports to assist in analyzing federal agencies. To accomplish the objective, this thesis identified the theoretical and historical basis of financial ratio analysis, identified the existing financial reporting models and ratio analysis frameworks in other sectors of the economy, and identified the financial accounting and reporting environment unique to the federal government. Based upon this archival research, this thesis developed a framework for financial ratio analysis of audited federal financial reports framed around the users and objectives of federal financial reporting. The users of audited federal financial reports can use this framework to assist in agency analysis, assist in decision-making processes, and assist in achieving the objectives of federal financial reporting.

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FRAMEWORK FOR FINANCIAL RATIO ANALYSIS OF AUDITED FEDERAL FINANCIAL REPORTS

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ABSTRACT

Federal agencies have traditionally prepared financial reports to monitor and report the obligation and expenditure of federal funding. With the passage of the Chief Financial Officers Act of 1990, Congress called for the production of financial statements that fully disclose a federal entity's financial position and results of operations. The disclosure of this type of information, it was believed, would enable decision-makers to understand the financial implications of budgetary, policy and program issues and provide an analytical tool for obtaining a deeper understanding of a federal agency's financial condition and operations. The objective of this thesis was to develop a framework for financial ratio analysis of audited federal financial reports to assist in analyzing federal agencies. To accomplish the objective, this thesis identified the theoretical and historical basis of financial ratio analysis, identified the existing financial reporting models and ratio analysis frameworks in other sectors of the economy, and identified the financial accounting and reporting environment unique to the federal government. Based upon this archival research, this thesis developed a framework for financial ratio analysis of audited federal financial reports framed around the users and objectives of federal financial reporting. The users of audited federal financial reports can use this framework to assist in agency analysis, assist in decision-making processes, and assist in achieving the objectives of federal financial reporting.

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I. INTRODUCTION

A. BACKGROUND

Federal agencies have traditionally prepared financial reports to monitor and report the obligation and expenditure of federal funding. With the passage of the Chief Financial Officers (CFOs) Act of 1990 (and reiterated by the Government Performance and Results Act of 1993, the Government Management Reform Act of 1994, and the Federal Financial Management Improvement Act of 1996), Congress called for the production of financial statements that fully disclose a federal entity's financial position and results of operations. The disclosure of this type of information, it was believed, would enable decision-makers to understand the financial implications of budgetary, policy and program issues and provide an invaluable analytical tool for obtaining a deeper understanding of the federal agency financial condition and operations.

Financial statement analysis is an information processing system designed to provide data for decision-makers by deciphering information from financial reports. Various techniques are used in the analysis of financial reports to emphasize the comparative and relative importance of the information presented and to evaluate the position of the organization. These techniques include ratio analysis, common size analysis, trend analysis, examination of relative size among organizations, comparison of results with other types of data, and a review of descriptive material. No one type of analysis is best or sufficient to support overall findings or to serve all types of users.

Financial ratios are a tool that enables management to analyze business situations and to monitor the performance of their organization. Financial ratios expedite the process of financial statement analysis by reducing the large number of items involved into a relatively small set of readily comprehended and economically meaningful indicators.

Archival and empirical studies of financial ratio analysis have been conducted since financial ratios became of use in the late 19^{th} century. Most of these studies concentrated on private sector organizations driven by the needs of creditors and the

equity markets. Limited studies on the applicability of financial ratio analysis have also been conducted for non-profit organizations and state/local governments. Additionally, frameworks for financial ratio analysis have been developed for private not-for-profit sector organizations and state and local government sector organizations.

This thesis first examines the theoretical and historical basis of financial ratio analysis in the United States. Second, this thesis examines frameworks for financial ratio analysis in three sectors of the economy: private for profit sector; private not-for-profit sector; and, state and local government sector. Third, this thesis examines the unique financial accounting and reporting environment of the federal government. Finally, this thesis draws upon this archival research to develop a framework for financial ratio analysis of audited federal financial reports.

The framework for financial ratio analysis of audited federal financial reports developed in this thesis is built upon and organized around the users and objectives of federal financial reporting. The users and objectives of federal financial reporting have been promulgated by the Federal Accounting Standards Advisory Board. These users are: Citizens, Congress, Federal Executives, and Program Managers. The objectives of federal financial reporting are: Budgetary Integrity, Operating Performance, Stewardship, and Systems and Control.

The use of this framework for financial ratio analysis will assist these users in assessing the performance of the agency under analysis, assist in resource allocation and other decision-making processes, and assist in achieving the objectives of federal financial reporting. In the end, improving the overall efficiency and effectiveness of federal agencies.

B. SCOPE AND OBJECTIVE

This thesis will first examine the theoretical and historical basis of financial ratio analysis. This thesis will then examine the current state of financial ratio analysis in the private for profit, private not-for-profit, and state/local government sectors. Finally, this thesis will examine the unique financial accounting and reporting environment of the federal government, discuss the purpose and applicability of financial ratio analysis to

audited federal financial reports, and develop a framework for financial ratio analysis of audited federal financial reports.

The primary objective of this study is to answer the following research question: What model or framework can be utilized for financial ratio analysis of audited federal financial reports?

The secondary objectives of this study, and precursors to answering the primary objective of this study, are:

1. What are ratios, ratio analysis, and financial ratio analysis?
2. What is the history of financial ratio analysis?
3. What is the relevance of financial ratio analysis?
4. How has financial ratio analysis been applied in the private sector?
5. How has financial ratio analysis been applied in state and local governments?
6. How has financial ratio analysis been applied in non-profit organizations?
7. What are the background, objective and purpose of federal financial reporting?
8. What types of financial reports are produced by Federal Agencies and what information is contained in those reports?
9. Can financial ratio analysis be applied to audited federal financial reports and for what purpose?
10. What financial ratios can be developed from audited federal financial reports?
11. Can the financial ratios developed from audited federal financial reports be categorized?

C. METHODOLOGY

The methodology for this thesis is based upon a two phased approach in analyzing and developing a framework for financial ratio analysis of audited federal financial reports. These phases, archival and analytical, ensure (1) relevant literature pertaining to the scope of the thesis has been reviewed and (2) the objectives of the thesis have been met.

The archival phase of the thesis research is composed of an extensive review of published academic articles, books, periodicals, public hearing reports, and federal

agency directives pertaining to (1) ratio analysis and frameworks, and (2) federal financial reporting. The results of the archival research phase provide the background information on financial ratios, existing financial ratio frameworks, and federal financial reporting utilized in the analytical phase.

The analytical phase of the research project is concerned primarily with analyzing the information gained in the archival phase, developing financial ratios from audited federal financial reports, and synthesizing those ratios into a relevant framework.

D. ORGANIZATION

This thesis is organized into five chapters. Following the introductory information and background contained in Chapter I, Chapter II reviews the background of ratios, ratio analysis, and financial ratio analysis from a historical perspective to examine and explain the foundation of modern financial ratio analysis.

Chapter III looks at different models of financial ratio analysis used in three different sectors of the economy: private for-profit, private not-for-profit, and state/local government. Chapter III presents the different sector models as they relate to the basic objectives of financial reporting and financial reports in each sector.

Chapter IV contains information on the financial reporting environment of the federal government. It examines the standard setting bodies and legislation, the background of federal financial reports, the requirements for audited federal financial reports, the basic objectives of federal financial reporting, and the financial reports used in federal financial reporting.

Chapter V first discusses the objectives and purposes of a framework for financial ratio analysis of audited federal financial reports. The methodology for selecting ratios for a framework is then discussed. Finally, financial ratios for audited federal financial reports are produced and a framework for financial ratio analysis of audited federal financial reports developed.

Chapter VI contains a summary, conclusions of this thesis, and presents areas for further research.

II. RATIOS, RATIO ANALYSIS, AND FINANCIAL RATIO ANALYSIS

A. RATIOS

Ratio is from the Latin verb *reri*, to think; past participle, *ratus* [Ref. 1:p. 478]. Hence, *ratio* in Latin terms meant reckoning, calculation, relation, or reason. Ratio is the relation between two similar magnitudes in respect of quantity, determined by the number of times one contains the other (integrally or fractionally) [Ref. 2:p. 168]. In simpler terms, a ratio is the relationship of one amount to another [Ref. 3:p. 566]. Ratios are important in measurement for basically every measurement is a ratio [Ref. 4:p. 183-184].

When two numbers are expressed in ratio form, the ratio is the quotient of the two numbers. When a number, called the first term, is divided by another number, the second term, the quotient is the ratio of the first term to the second term. This relationship may be written as follows:

first term : second term = first term/second term

It is futile to attempt to determine when the first concept of ratio appeared. When it came to Greek writers, we find Nicomachus including ratio in his arithmetic, Eudoxus in his geometry, and Theon in his chapter on music [Ref. 1:p. 477-478]. It has been said that the Babylonians in 2200 BC had some notion of the concept of ratio [Ref. 5:p. 41]. However, this understanding of ratios was confined to 'equal ratios' that differ in mathematical terms to 'ratio'. 'Equal ratios' are synonymous with 'proportion' whereas 'ratio' is on a higher level of abstraction [Ref. 5:p. 41]. To say that the first number (a) is equal or proportional to the second number (b) (i.e., a = b) is known as the concept of 'equal ratios'.

The earliest usable explanation of the concept of ratio can be found in Euclid's Book V of his *Elements* which he wrote in about 300 BC [Ref. 6:p. 284]. Euclid wrote that a ratio is a sort of relation in respect to size between two magnitudes. Euclid's writings centered on geometric ratios vice arithmetic ratios. Like earlier notions of ratios, Euclid's writings tended to focus on 'equal ratios' vice 'ratios'. So far as documentary

evidence goes, there is none to show that the Babylonians ever got within hailing distance of Euclid, who, if he did not succeed in giving an unsymmetrical definition of ratio, at least acted as if he were aware that 'ratio' and 'proportion' were different concepts [Ref. 5:p. 41].

Ratios were commonly used in the Middle Ages for arithmetic purposes. Of those ideas coming out of the Middle Ages, three general types of ratios of integers can still be found in use today. Namely, a ratio of equality, like a:b; a ratio of greater inequality, like a:b when a>b; and a ratio of lesser inequality, like a:b when a<b [Ref. 1:p. 479-480].

The ideas coming out of the Middle Ages have lead to the use of ratios for analytical purposes. Ratios have the ability to expedite analysis involving numerical data by reducing the large number of items involved into a relatively small set of readily comprehended meaningful indicators [Ref. 7:p. 11].

A ratio, to be a logical instrument for measuring numerical relation, must be a fraction containing, as numerator and denominator, items that have an inherent and comparable relationship to each other. Ratios are statistical tools which, like other statistical devices, must be used within the range of their efficiency to prevent misuse. Ratios as statistical tools aid the focusing of judgements in the interpretation of the dynamic aspects of the numerical data under analysis.

B. RATIO ANALYSIS

A single ratio by itself is meaningless – it does not furnish a complete picture and is simply data as opposed to information. A ratio becomes meaningful when compared with some standard. Ratios, like other statistical data, merely represent a convenient means of focusing the attention of the analyst on specific relationships that demand further investigation. A ratio in no way takes the place of thinking on the part of the analyst – ratios are not final in the sense of the word. A change in a ratio for a given date or period of time must be interpreted in light of the variations in each of the two items making up the ratio [Ref. 8:p. 297].

Ratio analysis can only be conducted when a set of ratios is judged from some standard set of comparisons. For example, in interpreting the ratios of a particular business entity, the analyst cannot determine whether the ratios indicate favorable or unfavorable conditions unless there are available standards with which to measure against. Standards with which to compare the ratios can take various forms:

1. Mental standards of the analyst based on experience and judgement, i.e., a general conception of what is adequate or normal which has been gained by his/her personal experience.
2. Ratios based on the records of past financial and operating performance of the individual business entity.
3. Ratios of selected competing business entities, especially the most progressive and successful ones.
4. Ratios developed by using the data included in the current budgets.
5. Ratios of the industry of which the business entity is a member.

Many of the latter ratios are developed and available via research agencies and trade associations. In most cases, the best comparison is with an equal business entity [Ref. 8:p. 297].

Complete comparability between firms is impossible but the use of standards with which to base judgements is not intended as an ideal condition. Standards are rather an average showing proportions existing in various industries at a given time, or during a specific period in time, which can be used to show similarities or dissimilarities in average standards of performance [Ref. 20:p. 6].

The comparison of ratios over a period of time is useful for measuring the trend of the organization and it supplies objective evidence of any disturbance of the financial structure or operations that deviate from the average. The ratio by itself, however, does not supply the solution. It can only be considered a symptom; and, this symptom is only as accurate as the underlying figures (numerator and denominator) from which it is drawn. For this reason, the accuracy of the underlying figures is imperative for effective ratio analysis [Ref. 20:p. 7].

Statistically, there are two primary reasons for using ratios as a form of analysis in a business setting. First, to control for the effect of size on the variables being examined and second to control for industry wide factors.

However, ratio analysis in a business setting is limited only by the imagination of those conducting the analysis. Table 2-1 provides a listing of possible uses of ratio analysis for sales, profitability, efficiency, marketing, investment, debt and capital analysis.

Monitor growth
Monitor costs
Measure profitability and return on investment
Identify trends
Define business plans
Compare one operating period to another
Compare actual results to plans
Compare current costs to historical costs
Measure adequacy of cash and working capital
Monitor asset allocation
Monitor collections
Diagnose problems
Compare performance of company to a competitor
Compare performance of one manager to another
Compare financial and non-financial information
Monitor employee productivity
Measure managerial efficiency
Communicate with lenders, investors, partners and owners
Track budget performance
Determine break-even levels
Warn of impending bankruptcy
Monitor employee turnover
Measure average order size
Measure tax rates
Interpret financial statements
Help prepare budgets and plans
Clarify relationships between statement items
Instruct trainees in business principles
Estimate business valuations
Estimate share prices for unlisted stocks
Measure returns to shareholders

Table 2-1: Possible Uses of Ratio Analysis in a Business Setting [Ref. 9:p. 6-7]

C. FINANCIAL RATIO ANALYSIS

Financial ratio analysis is a subdivision of a larger area of study known as financial statement analysis [Figure 2-1]. The analysis of financial statements is the compilation and study of relationships and trends [Ref. 20:p. 5]. Along with common size analysis, trend analysis, and comparisons, financial ratio analysis is used in financial statement analysis to emphasize the comparative and relative importance of the information presented and to evaluate the position of the organization.

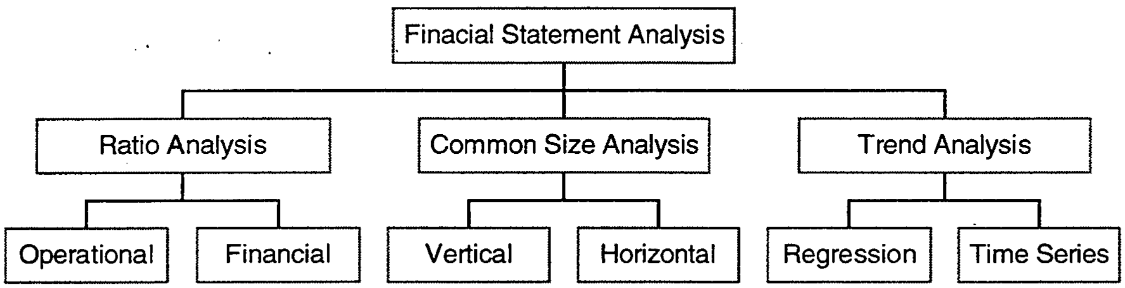

Figure 2-1: Areas of Financial Statement Analysis

Financial statement analysis is an information processing system designed to provide data for decision-makers [Figure 2-2] [Ref. 7:p. 1]. The inputs to this information processing system are the elements (data) of the financial statements themselves (i.e., balance sheet, income statement, and statement of cash flows for private sector for-profit business enterprises). The processes can include any combination of ratio analysis, common size analysis, and/or trend analysis. The output of the process is the information needed to make relevant decisions.

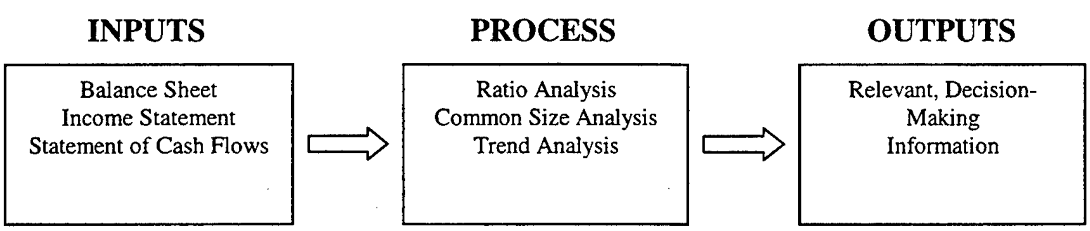

Figure 2-2: Financial Statement Analysis Information Processing System

1. Early Development of Financial Ratios

The adoption of ratios as a tool for financial statement analysis is a relatively recent development. With the vast geographical territory and the lack of transportation and communication facilities in the early period of the commercial history of the United States, the granting of long term credit was an imperative. Letters of reference and personal acquaintance had formed the basis for granting credit at the beginning of this economic growth but soon neither of these methods were adequate [Ref. 20:p. 13]. The drive towards industrialization in the latter half of the 19th century, combined with the increased sophistication of the capital markets, lead to an increased need for detailed analysis of financial statements by creditors, investors, and management. As the volume and flow of financial information increased greatly, the requests for financial statements for lending purposes and managerial control increased proportionately.

The earliest noted use of financial ratios in the United States appears to have been made by the Comptrollers of the Currency in their annual report to Congress on the financial conditions of national banks. John J. Knox presented in his annual report to Congress the returns of dividends and earnings of national banks in the form of statistical tables in which he showed the ratios of dividends to capital, dividends to capital and surplus, and earnings to capital and surplus. The use of ratios in the annual reports to Congress would continue and advance statistically over time [Ref. 20: p. 16].

Creditors and corporate management dominated the development paths in the late 1800's for ratio analysis as a tool for financial statement analysis. Creditors were interested in measures of ability to pay in conducting credit analysis. Management was interested in measures of profitability in their operations of the business. However, the early period of ratio analysis was dominated by the creditors as the sophistication of, and the demands on, the capital lending markets increased.

The analysis of financial statements by creditors in the late 1800's evolved through four stages. First, items in the financial statements were compared on an item by item basis. Following this item by item comparison, a comparative columnar basis of analysis was developed. After the columnar basis of analysis was developed, a

segregation of current from non-current items on the balance sheet occurred. Finally, relationships between different items in the financial statements began to appear [Ref. 6:p. 285].

One of the first ratios developed by the credit analysts was the current ratio.[1] It first appears in the last few years of the 1890's and was to have a more significant and long-lasting impact on financial statement analysis than any other ratio developed during this period [Ref. 10:p. 178]. The usage of ratios in financial statement analysis can be said to have begun with the advent of the current ratio.

2. 1900 - 1919

From the turn of the century through World War I, important events in the development of ratio analysis took place. First, a fairly large number of ratios were developed. Secondly, absolute ratio criterion began to appear including the now famous 2:1 current ratio criterion.[2] And third, analysts, both credit and management, began to recognize the need for inter-firm analysis and consequently the need for relative ratio criterion [Ref. 6:p. 185].

Additionally, two exogenous events took place during this period that had a significant impact on financial statements and ratio analysis. The passage of the Federal Income Tax Code of 1913 and the establishment of the Federal Reserve in 1914 increased the demand for financial statements and improved their content [Ref. 6:p. 185].

The end of this period was marked by the first formal study in ratio analysis. Alexander Wall's[3] classic work in 1919 – *The Study of Credit Barometrics* – was the first study to depart from the customary usage of a single ratio with an absolute criterion.

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[1] Current Ratio = Current Assets/Current Liabilities. The Current Ratio is a measure of liquidity, which is an indication of a company's ability to pay its bills. The Current Ratio measures the number of times current assets (cash, marketable securities, accounts receivable, inventory) cover current liabilities (accounts payable, notes payable, accrued expenses, taxes).

[2] Creditors during this period based the decision to grant credit almost entirely on ability to pay and the absolute current ratio criterion provided a means for this rational.

[3] Alexander Wall has been recognized as the pioneer in ratio work, not because he was the first to use ratios, but because he was the first to present a ratio method for analysis.

Wall compiled statistics for 7 different ratios for 981 firms and organized them by industry and geographic location. By applying these ratios to a large number of comparable cases, Wall established the norm or standard for each ratio in particular groups of firms. This "credit barometric" represented, under the theory of the law of averages, a normal point of concentration for the ratios. Wall found that there were variations in ratios between industries and between geographic regions [Ref. 11:p. 229-243]. Wall pioneered the use of multiple ratios and the use of empirically determined relative ratio criteria.

However, Wall's work was not without its critics. The principle objections raised by these critics were:

1) the complexity of the method;
2) the variability of the factors involved; and,
3) the difficulties in obtaining a sufficient number of comparable financial statements for calculating a meaningful mode or average [Ref. 20:p. 15].

Despite its critics. Wall's study is still considered the groundbreaking study in financial ratio analysis.

A final development during this period was that of a "pyramid" system in the evaluation of operating results of divisions by the E.I. du Pont de Nemours Company. The du Pont Company believed that a system of financial control should include a periodic forecast of sales and profits, a forecast of working capital requirements and cash resources, a capital expenditures budget and working capital standards, together with statements that show actual operating performance and balance sheet conditions promptly after the close of the accounting periods [Ref. 12:p. 5]. The apex of the pyramid system was rate of return on investment of which Alfred P. Sloan, Jr., stated, "no other financial principle with which I am acquainted serves better than rate of return as an objective aid to business judgement" [Ref. 13:p 140]. The du Pont "pyramid" system [Figure 2-3] was the first documented framework for ratio analysis used operationally and effectively for managerial analysis.

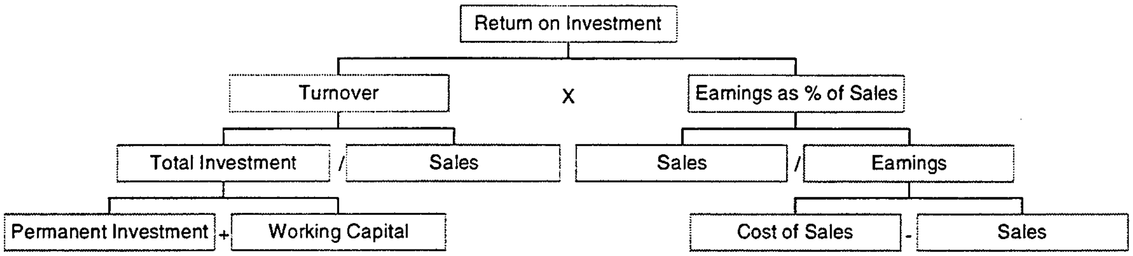

Figure 2-3: du Pont "Pyramid"? System

3. 1920 - 1929

During the next decade, interest in ratios increased as did the volume of publications relating to ratio analysis. Many of these publications referred to "scientific ratio analysis" and the collection of industry ratio data and averages.[4] Interest in both these areas of study can be attributed to Wall's study of 1919.

Two other developments during the 1920's marked the emergence of two different schools of thought on ratio analysis. One saw ratios as fundamental measures of the business enterprise and the other viewed ratios as artificial measures of the business enterprise. An advocate of the former was James H. Bliss. Bliss presented the first coherent system of ratios that were tied together in a logical *a priori* fashion. From this, Bliss developed a model of the firm that consisted entirely of ratios [Ref. 6:p. 287]. Bliss considered ratios to be "indicators of the status of fundamental relationships within a business" [Ref. 14:p. 34-38].

Dominating the latter school of thought was Stephen Gilman, the first real critic of ratio analysis. Gilman criticized the computation of industry average ratios; but, he was really attacking the limitations of the underlying absolute accounting data, especially the lack of comparability and consistency [Ref. 15:p. 111-112]. Gilman's specific objections to ratio analysis were:

1) changes over time can not be interpreted because the numerator and denominator both vary;

[4] The "scientific" was dropped soon after as there was no hypothesis testing involved.

2) ratios are artificial measures;

3) ratios divert the analysts attention from a comprehensive view of the firm; and,

4) the reliability as indicators varies widely between ratios.

Gilman presented the trend percentage method of analysis to be used in place of ratio analysis. This method applies statistical index numbers to various items of successive financial statements to establish a trend. Gilman's critique of ratios and his development of a new analysis method clearly displayed his belief that ratios did not portray the "fundamental relationship within the business" [Ref. 6:p 287].

4. 1930 – 1939

The discussion of ratios, the compilation of industry average ratios, and the increases in the form and content of financial information continued both exogenous and endogenous to the field of ratio analysis during the next decade. The Securities Act of 1933 and the Securities and Exchange Act of 1934 were both exogenous events that aided in the development of more sophisticated ratio analysis. Both acted to increase the demand for financial statements and to improve on their content. Two endogenous areas of study significantly impacting financial ratio analysis during this period were the development and determination of the most effective "group" of ratios and the efficiency of ratios as predictors of corporate financial difficulties. These two areas were shown to have counter-balancing impacts ("pragmatic empiricism" vs. empirical studies) on the direction of ratio analysis use and research.

Roy A. Foulke was the most successful promoter of his group of ratios because he could supply industry data for his group. Foulke worked for Dun & Bradstreet in the 1930's and came up with a group of 14 ratios that he published in a series of articles in the 'Dun & Bradstreet Monthly Review'. Foulke justified his 14 ratios with their accompanying criteria by citing his many years of experience with them. This approach, known as 'pragmatic empiricism, became the *modus operandi* for the development of groupings for ratio analysis [Ref. 6:p. 288].

Other studies on the efficiency of ratios as predictors of corporate financial difficulties acted as a counter-balance to the pragmatic empiricism approach. Winaker and Smith conducted empirical studies on firms who experienced financial difficulty between 1923 and 1931 using a set of 21 ratios [Ref. 16]. They found net working capital to total assets to be the most predictive of corporate financial difficulty. A second study by Paul J. Fitzpatrick analyzed 13 ratios for 20 firms that failed between 1920 – 1929 and followed this up with a comparison of 19 successful firms [Ref. 17]. He found all ratios predicted failure to some degree but that the net profit to net worth[5], debt to net worth,[6] and the fixed assets to net worth[7] were generally the best indicators. A final study by Ramser and Foster looked at 11 ratios for 173 firms and found that those who were less successful and those that failed tended to have ratios which were lower than those who were successful [Ref. 18]. However, two turnover ratios, sales to net worth and sales to total assets, exhibited the opposite tendency. While these empirical studies had their shortcomings – sample size and selection being the most notable – they still provided significant contributions and were the first studies to utilize the scientific method for determining the utility of ratios [Ref. 6:p. 289].

5. 1940 – 1945

During the war years, studies on the empirical base of ratio analysis continued and the usage of some ratios was vindicated formally. Additionally, ratios were increasingly being used as independent and descriptive variables in aggregate economic studies. Although their center of attention was not ratios themselves, these studies did provide abundant information about the behavior of ratios over time and the variation of ratios

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[5] Commonly referred to as Return on Equity. Return on Equity = Net Profit/Net Worth. Many believe it is the final criterion of profitability. Many creditors and investors pay particular attention to this ratio as it tells how much the company is making from money invested. They see it as a key indicator of overall operating efficiency and the quality of management.

[6] Commonly referred to as the Debt to Equity ratio. Debt to Equity = Debt/Equity. This ratio, popular with creditors, compares the total of what is owed to what is owned.

[7] Commonly referred to as the Fixed Asset ratio. Fixed Asset Ratio = Fixed Assets/Net Worth. This indicator of financial strength measures the liquidity of the shareholder equity.

between different groupings of firms – and a few of these studies did touch upon some questions relating directly to the possible usefulness of ratios in the analysis of financial statements. [Ref. 6:p. 289-290]

6. 1946 – 1969

From the end of the war up to the beginning of the technological revolution, the development of ratio analysis continued along various paths. In the 1950's, there was a flurry of excitement about the utility of a ratio breakdown of return on investment for purpose of managerial analysis. It was found that return on investment could serve as an apex for a framework for financial ratio analysis containing numerous ratios. This was not a new idea [du Pont, Bliss] but it had not received widespread attention until this time.

Also during this period, the Small Business Administration began to publish numerous works on ratio analysis for the operations of small business. These works included:

1) "how to do it" booklets;
2) evaluation of reliability of industry average ratios;
3) analysis of Actual usage of ratios by small business;
4) studies where ratios were used as variables for examining and describing the operations of small business.

Additionally, ratios were being used as variables for examining and describing economic activity. First, additional evaluations and empirical studies into the power of ratios to predict corporate failure were conducted. Secondly, ratios were being used as independent variables in a series of studies dealing with the quality of credit under various cyclical conditions.

Another area of research during this period on the predictive power of ratios in regards to the psychological characteristics of the firm. Sorter and Becker examined the relationship of financial ratios and a psychological model of the corporate personality and found that conservative firms maintained higher liquidity and solvency ratios [Ref. 19:p. 183-196].

Finally, the period marked the beginning of more rigorous scrutiny of the nature of financial ratios. Studies in this area included the effects on ratios of different accounting procedures (i.e., LIFO vs. FIFO), and the behavior of a variety of ratios purporting to measure the same thing.

7. 1970 – Present

Ratio analysis came under even more scrutiny as advances in technology allowed for more complex and detailed analysis of the ratio method. Prior to this period, ratio analysis was popularized not by its structural validity but by its convenience [Ref. 21:p. 89]. Since 1970, studies have been based heavily on statistical analysis, empirical research, and quantitative methods.

One area of study during this period concerns the distributional properties of ratios. Edward B. Deakin conducted a study on an investigation of the normality of the distribution of eleven commonly used financial ratios. Deakin found that the assumption of normality in the distribution of financial ratios does not hold but that normality could be achieved in certain cases by transforming the data. He also found that there appeared to be an indication that financial accounting ratios might be more normally distributed within a specific industry group. This helped to dissuade the notion about the uselessness of ratio analysis to those outside the firm that had been raised via recent application of advanced statistical techniques. [Ref. 22]

Other areas of study included the examination of the methodology of ratio analysis. Lev and Sunder conducted a study in this area to examine the conditions under which conventional tools, namely financial ratios and measures of industry central tendency, achieve the intended objectives of the analysis. Their study was based upon the premise that the objectives of using ratios for analysis are:

1) to control for the systematic effect of size on the variables under consideration; and,
2) to control for (hold constant) additional factors (e.g., technology) which affect all firms within a homogeneous group such as an industry.

They concluded that it appeared the extensive use of financial ratios by both practitioners and researchers is more often motivated by tradition and convenience rather than by careful methodological analysis. Basic questions, such as does the use of financial ratio analysis call for control of size and/or other industry wide factors in the analysis, what is the structural relationship between the examined variable and size, and how can the control of size and other factors be best achieved, are rarely addressed by users of financial ratios. The objective of their study, therefore, was "to encourage users of financial ratios to examine carefully the adequacy of using ratios in their analysis". [Ref. 23]

Additional studies during this period were conducted on the statistical validity of the ratio method in financial analysis. McDonald and Morris conducted a study on the comparison of the ratio method of analysis versus a more general ordinary least-squares method. The authors used three models with two samples, one with a single industry and the other with one randomly selected firm from each industry branch. They found that the ratio method proved to be consistently superior to alternative specifications in a series of tests for an intra-industry sample and provided strong empirical support for simple ratio analysis in its traditional form. [Ref. 21]

A final area of study directly related to this thesis has been on the methods of identifying classifications for financial ratios. Salmi and Martikainen presented a review on the methods that are used for determining which ratios to use in studies and which methods are used to determine which ratios to use in practice. They found four common methods in use: pragmatic empiricism; deductive approach; inductive approach; and, a combination of the deductive and inductive approaches known as the confirmatory approach.

- *Pragmatic Empiricism*: Pragmatic empiricism is nothing more than the subjective classification of financial ratios based on practical experience, views, or judgements. It is common, therefore, for ratio classifications under this method to differ slightly from author to author in textbooks on financial analysis. In the private sector, three categories of financial ratios are more or

less common: profitability, long-term solvency, and short-term solvency. Beyond that, there is no clear consensus.

- *Deductive Approach*: The deductive approach goes back to 1919 to the du Pont "pyramid" system. In this approach, the classification of the financial ratios is based on the technical relationships between the different financial ratios. The deductive approach to establish relevant financial ratio categories has more or less stalled and, as a consequence, has become intermixed with the inductive approach discussed next.
- *Inductive Approach*: The inductive approach is the empirical classification of financial ratios using statistical techniques – factor analysis in particular. In this approach, factor analysis is used to reduce a large number of financial ratios into a smaller number of mutually exclusive categories covering the various aspects of the firm's activities. Factor analysis and the inductive approach have been used in a multitude of studies conducted over the past 30 years. It seems, however, that despite the optimism surrounding factor analysis and the inductive approach, the inductive studies have not been able to agree on a consistent classification of financial ratio factors. Consequently, a number of recent studies hypothesize an *a priori* classification and then try to confirm the classification with empirical evidence – or, more appropriately, using the confirmatory approach.
- *Confirmatory Approach*: The confirmatory approach uses both the deductive approach and the inductive approach. First, using the deductive approach (usually based upon pragmatic empiricism), classification factors for financial ratio analysis are determined – much like the du Pont "pyramid" system. Then, following this *a priori* classification, the inductive approach is used to confirm this classification pattern. The confirmatory approach used extensively in studies since 1979. [Ref. 24]

This thesis relies primarily on pragmatic empiricism and the deductive approach in developing a framework for financial ratio analysis of audited federal financial reports.

In researching frameworks from other sectors and in identifying the environmental factors effecting financial reporting in the federal government, both the pragmatic empiricism approach and the deductive approach can be utilized in the analysis phase. Recommendations for further study will address the inductive and confirmatory approaches.

Chapter II has examined the use and research of ratios, financial ratios, and financial ratio analysis from a historical perspective. Ratios as a tool of analysis are measures between the relation of two items. When used as tools of financial statement analysis, financial ratios are only effective if the items on the financial statements are accurate and if the analyst has the ability to choose the appropriate ratio to fulfill the purpose for which the analysis is being conducted. The development of the use of ratios in financial statement analysis parallels the increase in the demand for, and sophistication of, financial statements.

Chapter III will now present frameworks for financial ratio analysis from three different sectors of the economy: private for-profit, not-for-profit, and state/local government. The frameworks for financial ratio analysis will be presented within the context of the objectives of financial reporting for each sector and within the context of the structure of the financial reports for each sector.

III. FINANCIAL RATIO ANALYSIS FRAMEWORKS

A. PRIVATE FOR-PROFIT SECTOR

1. Private For-profit Sector Objectives of Financial Reporting

The objectives of financial reporting in the private for-profit sector are promulgated by the Financial Accounting Standards Board (FASB).[8] The FASB's Statement on Financial Accounting Concepts (SFAC) No. 1, "Objectives of Financial Reporting by Business Enterprises", presents the goals and objectives of accounting and financial reporting and are the building blocks for the FASB's conceptual framework. SFAC No.1 was released in 1973. [Ref. 25]

The overall purpose of SFAC No. 1 is to state the highest level concepts in the top-down structure that is used by the FASB. In doing this, the FASB identified a primary objective for financial reporting and then clarified it with several others. The overriding primary objective is stated as follows:

> Financial reporting should provide information that is useful to present and potential investors and creditors and other users in making rational investment, credit, and similar decisions [Ref. 25:par. 34].

By establishing this objective, SFAC No. 1 elevates users to the highest level of priority among the FASB's constituents. Pursuing this objective requires that all new and existing generally accepted accounting principles be evaluated in terms of their contribution to the usefulness of the information provided to investors, creditors, and other decision makers whose position external to the organization limits their access to financial data.

In order to bring this very high-level objective down to a more applicable level, the FASB went on to clarify it with two sub-objectives:

> Financial reporting should provide information to help present to potential investors and creditors and other users in assessing the amounts, timing, and

[8] Since 1973, the FASB has been the designated organization in the private sector for establishing standards of financial accounting and reporting.

> uncertainty of prospective cash receipts from dividends or interest and the proceeds from the sale, redemption, or maturity of securities or loans [Ref. 25: par. 37].
>
> Financial reporting should provide information about the economic resources of an enterprise, the claims to those resources (obligations of the enterprise to transfer resources to other entities and owners' equity), and the effects of transactions, events, and circumstances that change resources and claims to those resources [Ref. 25:par. 40].

The objectives of financial reporting for private sector business organizations flow from the preceding paragraphs. At the most basic level, those objectives are to provide:

- Information useful in investment and credit decisions.
- Information useful in assessing cash flow prospects.
- Information about enterprise resources, claims to those resources, and changes in them.

A notable additional feature of SFAC No. 1 is its description of some of the qualities of the users that the FASB said that it would be concerned with. Specifically, SFAC No. 1 says:

> The information should be comprehensible to those who have a reasonable understanding of business and economic activities and are willing to study the information with reasonable diligence [Ref. 25:par. 34].

By creating this policy, the FASB can usually disregard arguments that "typical" or "naïve" investors might not understand proposed information. While these individuals may receive financial information, the FASB does not intend to simplify the information to the point that it will be immediately comprehensible without training and effort.

As such, the FASB has designated the principal users of private sector financial reports as:

- Current and Future Investors.
- Current and Potential Creditors [Ref. 25:par. 24-27].

2. Private For-profit Sector Financial Reports

The published financial statements of a private sector business enterprise typically consist of the (1) balance sheet, (2) income statement, and (3) statement of cash flows.

The measurement of past performance is the primary purpose of these published financial statements; however, each statement measures the past in a different way. Accompanying footnotes are also provided to elaborate on items indicated in the above statements.

a. Balance Sheet

The balance sheet or, as it is sometimes called, statement of financial position is used to show the financial condition of a business enterprise as of a particular date. The balance sheet consists of three sections: assets, liabilities, and stockholders equity.

Assets are the resources of the firm which provide probable future economic benefits. Liabilities are claims on resources which provide probable future sacrifices of the economic benefits of those resources. Stockholders equity is the owners' interest in the business enterprise.

The assets are derived from two sources, creditors (through liabilities) and owners (through stockholders equity). At any point and time, the assets must equal the contribution of the creditors and owners. This is expressed in the basic accounting equation:

Assets = Liabilities + Stockholders Equity

The balance sheet is presented with the assets equal to liabilities plus stockholders equity. This presentation is usually side by side, called the account form, or top and bottom, called a report form. A typical account form format is presented in Figure 3-1, and a typical report form is presented in Figure 3-2.

b. Income Statement

The income statement is a summary of revenues and expenses and gains and losses ending with comprehensive income for a particular period of time. The FASB's SFAC No. 6, "Elements of Financial Statements" defines those elements making up the income statement as follows:

Assets			**Liabilities**		
Current Assets			**Current Liabilities**		
Cash	xxx		Accounts Payable	xxx	
Accounts Receivable	xxx		Notes Payable	xxx	
Inventory	xxx		Other	xxx	
Marketable Securities	xxx		Total Current Liabilities		xxx
Other	xxx		**Non-Current Liabilities**		
Total Current Assets		xxx	Long Term Debt	xxx	
Non-Current Assets			Other	xxx	
Land	xxx		Total Non-Current Liabilities		xxx
Buildings	xxx		**TOTAL LIABILITIES**		xxx
Machinery & Equip.	xxx				
Investments	xxx		**Stockholders Equity**		
Other	xxx		**Contributed Capital**		
Total Non-Current Assets		xxx	Preferred Stock	xxx	
TOTAL ASSETS		xxx	Common Stock	xxx	
			Additional Paid in Capital	xxx	
			Retained Earnings	xxx	
			TOTAL STOCKHOLDERS EQUITY		xxx
			TOTAL LIAB. & STKHOLDERS EQUITY		xxx

Figure 3-1: Private For-profit Sector Balance Sheet Account Form Report Format

Revenues: Inflows or other enhancements of assets of an entity or settlement of its liabilities (or a combination of both) during a period from delivering or producing goods, rendering services, or other activities that constitute the entity's ongoing major or central operations.

Expenses: Outflows or other using up of assets or incurrences of liabilities (or a combination of both) during a period from delivering or producing goods, rendering services, or carrying out other activities that constitute the entity's ongoing major or central operations.

Gains: Increases in equity (net assets) from peripheral or incidental transactions of an entity and from all other transactions and other events and circumstances affecting the entity during a period except those that result from revenues or investments by owners.

Losses: Decreases in equity (net assets) from peripheral or incidental transactions of an entity and from all other transactions and other events and circumstances affecting the entity during a period except those that result from expenses or distributions to owners.

Assets			
Current Assets			
Cash	xxx		
Accounts Receivable	xxx		
Inventory	xxx		
Marketable Securities	xxx		
Other	xxx		
Total Current Assets		xxx	
Non-Current Assets			
Land	xxx		
Buildings	xxx		
Machinery & Equip.	xxx		
Investments	xxx		
Other	xxx		
Total Non-Current Assets		xxx	
TOTAL ASSETS			xxx
Liabilities			
Current Liabilities			
Accounts Payable	xxx		
Notes Payable	xxx		
Other	xxx		
Total Current Liabilities		xxx	
Non-Current Liabilities			
Long Term Debt	xxx		
Other	xxx		
Total Non-Current Liabilities		xxx	
TOTAL LIABILITIES		xxx	
Stockholders Equity			
Contributed Capital			
Preferred Stock	xxx		
Common Stock	xxx		
Additional Paid in Capital	xxx		
Retained Earnings	xxx		
TOTAL STOCKHOLDERS EQUITY		xxx	
TOTAL LIAB. & STOCKHOLDERS EQUITY			xxx

Figure 3-2: Private For-profit Sector Balance Sheet Report Form Report Format

Comprehensive Income: Change in equity (net assets) of an entity during a period from transactions and other events and circumstances from non-owner sources. It includes all changes in equity during a period except those resulting from investments by owners and distributions to owners. [Ref. 26:p. x]

The FASB established the comprehensive income concept in 1997 through Statement of Financial Accounting Standard (SFAS) No. 130. SFAS No. 130 established standards for reporting and display of comprehensive income and its components

(revenues, expenses, gains, and losses) in a full set of general-purpose financial statements. SFAS 130 provides four examples of displaying comprehensive income including displaying it in the Income Statement (which is the form it will be presented in this thesis). Comprehensive income is more inclusive than net income as it includes net income and all other changes in equity exclusive of owners' investments and distributions. [Ref. 27]

The accounting model for the income statement is:

Revenue – Expense = Comprehensive Income

The income statement is traditionally represented in one of two formats, the single-step format and the multi-step format [Ref. 28:p. 91-92]. The single-step format (Figure 3-3) first shows an aggregate of all revenues and gains; then, an aggregate of all expenses and losses are subtracted from the revenues and gains to arrive at net income. Finally, other comprehensive income changes are made to arrive at a comprehensive income figure.

Revenues and Gains		
Net Sales	xxx	
Other Revenues	xxx	
Gains	xxx	
Total Revenues and Gains		xxx
Expenses and Losses		
Cost of Goods Sold	xxx	
Selling and Administrative Expenses	xxx	
Interest Expense	xxx	
Losses	xxx	
Income Tax Expense	xxx	
Total Expenses and Losses		xxx
Net Income		xxx
Other Comprehensive Income		
Foreign Currency Translation		xxx
Unrealized Gains/Losses on Securities		xxx
Pension Liability		xxx
Other Comprehensive Income		xxx
Comprehensive Income		xxx

Figure 3-3: Private For-profit Sector Single-Step Income Statement Report Format

The multi-step income statement format (Figure 3-4) has operating and non-operating sections and an intermediary calculation of gross margin (income before operating expenses and non-operating items). Again, other comprehensive income changes are made after calculating net income from continuing operations to arrive at a final, comprehensive income figure.

Net Sales		xxx
Cost of Goods Sold		xxx
Gross Margin		xxx
Operating Expenses		
Selling Expense	xxx	
Administrative Expense	xxx	xxx
Operating Profit		xxx
Other Revenues and Gains		xxx
Other Expenses and Losses		xxx
Pretax Income		xxx
Income Tax Expense		xxx
Net Income		xxx
Other Comprehensive Income		
Foreign Currency Translation		xxx
Unrealized Gains/Losses on Securities		xxx
Pension Liability		xxx
Other Comprehensive Income		xxx
Comprehensive Income		xxx

Figure 3-4: Private For-profit Sector Multi-Step Income Statement Report Format

c. *Statement of Cash Flows*

The Statement of Cash Flows is the newest of the three primary financial statements required by private sector business enterprises. The statement of cash flows became a requirement in 1988 with the passage of the FASB's SFAS No. 95, "Statement of Cash Flows".[9] The statement of cash flows is often referred to as the "funds statement".

The statement of cash flows reports the entity's cash flows from three primary activities: cash flows from operating activities; cash flows from investing activities; and, cash flows from financing activities. The accounting model for the statement of cash flows is:

[9] Previously, a similar statement called the Statement of Changes in Financial Position was required starting in 1971.

Cash (beginning of period)
+/- Cash Flows from Operating Activities
+/- Cash Flows from Investing Activities
+/- Cash Flows from Financing Activities
= Cash (end of period)

The information provided in the statement of cash flows is intended to aid in:

a. Assessing the enterprises ability to generate positive future cash flows;
b. Assessing the enterprises ability to meet its obligations, its ability to pay dividends, and its need for external financing;
c. Assessing the reasons for differences between net income and associated cash receipts and cash payments; and,
d. Assessing the effects on an enterprises financial position of both its cash and non-cash investing and financing transactions during the period. [Ref. 29:par. 5]

The importance of a statement of cash flows is identified in the FASB's SFAC No. 1, "Objectives of Financial Reporting by Business Enterprises" and SFAC No. 1's emphasis on cash. SFAC No. 1 states:

> Since an enterprise's ability to generate favorable cash flows affects both its ability to pay dividends and interest and the market prices of its securities, expected cash flows to investors and creditors are related to expected cash flows to the enterprise in which they have invested or to which they have loaned funds [Ref. 25:par. 39].

A typical statement of cash flows for a private sector business enterprise is presented in Figure 3-5.

Cash Flows from Operating Activities		
Revenue Inflows	xxx	
Expense Outflows	xxx	
Net Cash Flows from Operating Activities		xxx
Cash Flows from Investing Activities		
Investing Inflows	xxx	
Investing Outflows	xxx	
Net Cash Flows from Investing Activities		xxx
Cash Flows from Financing Activities		
Financing Inflows	xxx	
Financing Outflows	xxx	
Net Cash Flows from Financing Activities		xxx
Net Change in Cash		xxx
Cash (Beginning of Period)		xxx
Cash (End of Period)		xxx

Figure 3-5: Private For-profit Sector Statement of Cash Flows Report Format

3. Private Sector Financial Ratio Analysis Frameworks

The historical basis of financial ratio analysis in the private sector has been examined at length in Chapter II. Throughout its history, practitioners and researchers have come up with a vast number of ratios to be used in the evaluation of the performance and financial status of the business enterprise.

Financial ratios in the private sector can be computed from any pair of numbers in the financial statements. Given the large quantity of variables included in the financial statements, a very long list of ratios can be derived. There is no, one list of ratios or standard computation, each author, source or analyst on financial statement analysis uses a different list.

Comparison of income statement and balance sheet items, in the form of ratios, can create difficulties due to the timing of the financial statements. Specifically, the income statement covers the entire period whereas the balance sheet reports the financial position at a point in time. Ideally, to compare an income statement item with a balance sheet item requires the use of some reasonable measure of an average for the balance sheet item. This can usually be accomplished by taking the average of the beginning balance plus the ending balance. This approach smoothes out changes from beginning to

end, but it does not eliminate problems of seasonal or cyclical changes. It also does not eliminate problems of changes that occur unevenly throughout the year.

With all the elements of the three primary financial statements available, analysts could compute an innumerable amount of financial ratios. The two frameworks covered in this thesis present a listing of the most widely used ratios and a description of their calculation based upon the categories in which they are used. While these two frameworks are certainly not "all inclusive", they should provide the reader with an indication of the types and nature of the frameworks for financial ratios analysis in the private sector.

a. Standard Classification of Financial Ratios

Different approaches have been applied on the classification of financial ratios. The first approach, based upon pragmatic empiricism, is the classification of financial ratios into different categories. In this approach, the classifications of financial ratios have largely been developed from established business practices and personal views. Textbooks typically differ on which financial ratios should be present in each category; however, the goal of each category is usually the same. Most frameworks build around the following categories: liquidity, leverage, asset management, and profitability.

(1) Liquidity Ratios. liquidity ratios are measures of a firm's ability to meet its current obligations. The ability of a private sector business enterprise to maintain its current (short-term) debt paying ability is important to the users of the financial statements. If the enterprise can not maintain its current debt paying ability, it may be an indication that it will not be able to maintain its non-current (long-term) debt paying ability. Liquidity ratios may also include ratios that measure the efficiency of the use of current assets. Ratios that typically fall into the liquidity category are presented in Table 3-1. [Ref. 28:p. 178]

Ratio Title	Ratio Formula
Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liab.}}$
Quick Ratio	$\frac{\text{Cash + Mkt. Sec. + Accounts Receivable}}{\text{Current Liab.}}$
Cash Ratio	$\frac{\text{Cash}}{\text{Current Liab.}}$
Merchandise Inventory Turnover	$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$
Inventory Turnover in Days	$\frac{\text{Average Inventory x 365}}{\text{Cost of Goods Sold}}$
Sales to Working Capital	$\frac{\text{Sales}}{\text{Average Working Capital}}$

Table 3-1: Common Private For-profit Sector Liquidity Ratios

(2) Leverage Ratios. Leverage ratios (also known as solvency ratios) measure the extent to which the firm uses debt financing. The level of debt financing is important for three reasons. First, by raising funds through debt, the owners can maintain control of the firm with a limited investment. Second, creditors look to the equity to provide a margin of safety – the risk of failure is borne by the creditors if the owners have provided only a small amount of the total financing. And third, if the firm earns more on investments financed with borrowed funds than it pays in interest, the return on the owners' capital is magnified or "leveraged". [Ref. 30:p. 188]

Debt of an entity carries two obligations: one to repay the principal and the other to pay interest during the period of time that the principal is owed. Therefore, when analyzing the leverage of an enterprise, it is necessary to determine the enterprise's ability to pay the principal and the interest on the debt. [Ref. 28:p. 242] Common leverage ratios are presented in Table 3-2.

Ratio Title	Ratio Formula
Debt Ratio	$\frac{\text{Total Liab.}}{\text{Total Assets}}$
Times Interest Earned	$\frac{\text{EBIT, Minority Income, \& Equity Earnings}}{\text{Interest Expense}}$
Fixed Charge Coverage	$\frac{\text{EBIT + Minority Income \& Equity Earnings}}{\text{Interest Expense}}$
Debt to Equity Ratio	$\frac{\text{Total Liab.}}{\text{Share holders' Equity}}$
Debt to Tangible Net Worth	$\frac{\text{Total Liab.}}{\text{Share holders' Equity - Intangible Assets}}$
Cash Flow to Total Debt	$\frac{\text{Cash Flow}}{\text{Total Debt}}$

Table 3-2: Common Private For-profit Sector Leverage Ratios

(3) Asset Management Ratios. Asset management ratios measure how effectively the firm is managing its assets. These ratios are designed to display the effectiveness of management's efforts in employing its assets. Table 3-3 presents typical asset management ratios.

Ratio Title	Ratio Formula
Inventory Turnover	$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$
Receivables Turnover	$\frac{\text{Sales}}{\text{Average Accounts Receivable}}$
Days Sales Outstanding	$\frac{\text{Accounts Receivable x 365}}{\text{Sales}}$
Fixed Asset Turnover	$\frac{\text{Sales}}{\text{Average Fixed Assets}}$
Total Asset Turnover	$\frac{\text{Sales}}{\text{Average Total Assets}}$

Table 3-3: Common Private For-profit Sector Asset Management Ratios

(4) Profitability Ratios. Profitability ratios show the combined effects of liquidity, leverage, and asset management on operating results. Profitability is the net result of a large number of policies and decisions and is important to creditors (as they are one source of funds for debt coverage) and management (as it is often used as a

performance measure). In analyzing profit, absolute figures are less meaningful than earnings measured in terms relative to a number of bases. [Ref. 28:p. 295] Table 3-4 presents common profitability ratios.

Ratio Name	**Ratio Formula**
Net Profit Margin	$\frac{\text{Net Income Before Minority Share and Non Recurring Items}}{\text{Net Sales}}$
Gross Profit Margin	$\frac{\text{Gross Profit}}{\text{Net Sales}}$
Operating Income Margin	$\frac{\text{Operating Income}}{\text{Net Sales}}$
Return on Investment	$\frac{\text{Net Income Before Minority Share and Nonrecurring Items} + \text{(Interest Expense)} \times \text{(1-Tax Rate)}}{\text{Average (Long-Term Liabilities + Equity)}}$
Return on Total Equity	$\frac{\text{Net Income Before Nonrecurring Items}}{\text{Average Total Equity}}$
Return on Common Equity	$\frac{\text{Net Income Before Nonrecurring Items} - \text{Preferred Dividends}}{\text{Average Common Equity}}$
Return on Assets	$\frac{\text{Net Income Before Minority Share of Earnings, Nonrecurring Items, and Interest Expense}}{\text{Average Total Assets}}$

Table 3-4: Common Private For-profit Sector Profitability Ratios

b. du Pont Framework

While many frameworks for financial ratio analysis have been developed which utilize the return on investment as their apex, the du Pont "pyramid" system framework was the first to develop this methodology. Developed by the E.I. du Pont de Nemours Company, the Du Pont framework shows how the return on investment is affected by asset turnover and the profit margin. Many variants of the du Pont framework have been developed which also include leverage measures. Figure 3-6 presents the traditional du Pont framework for financial ratio analysis. [Ref. 12:p. 3-5]

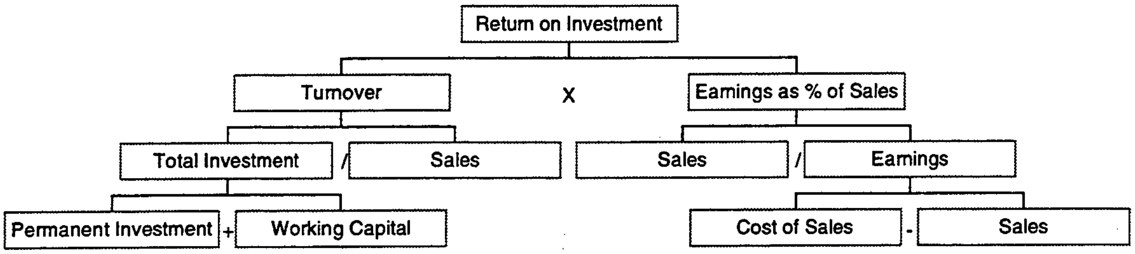

Figure 3-6: Traditional du Pont Framework

Figure 3-7 presents the modern du Pont framework. Like the traditional du Pont framework, the modern framework effectively illustrates the relationships among key financial ratios. The left side of the chart develops a business entity's profit margin; the right side develops its total assets turnover ratio. The profit margin is then multiplied by the assets turnover ratio to arrive at the rate of return on assets (ROA). The use of debt is brought into the chart by multiplying the ROA by the equity multiplier to arrive at the rate of return on equity (ROE). The ROE could be calculated more easily; however, the du Pont framework is useful in illustrating how debt, assets turnover, and profitability ratios interact to determine the ROE. [Ref. 30:p. 197]

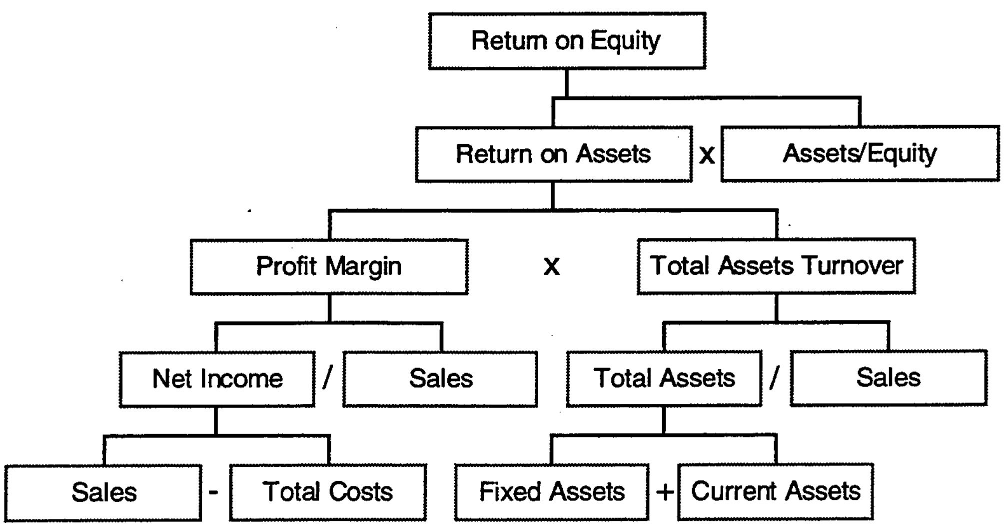

Figure 3-7: Modern du Pont Framework

B. PRIVATE NOT-FOR-PROFIT SECTOR

1. Private Not-For-Profit Sector Objectives of Financial Reporting

The basic objectives of financial reporting for private not-for-profit sector business enterprises are governed by the same authoritative body which govern private sector business enterprises, the FASB. The FASB's SFAC No. 4, "Objectives of Reporting by Non-business Organizations" was issued in December 1980 and applies to non-business (not-for-profit) business enterprises but excludes government entities.[10] The objectives of this statement stem from the common interests of those who provide resources to not-for-profit organizations in the services those organizations provide and their continuing ability to provide services.

Non-business (not-for-profit) enterprises are identified in paragraph 6 of SFAC No. 4 as those entities which possess the following three qualities:

- receipts of significant amounts of resources from resource providers who do not expect to receive either repayment or economic benefits proportionate to resources provided;
- operating purposes that are primarily other than to provide goods or services at a profit or profit equivalent; and,
- absence of defined ownership interests that can be sold, transferred, or redeemed, or that convey entitlement to share of a residual distribution of resources in the event of liquidation of the organization.

In other words, non-business or not-for-profit organizations have no owners, no profits, and no owners' equity in the traditional business sense. These three characteristics result in certain types of transactions that are absent in "for-profit" business enterprises. [Ref. 31:par. 6]

Not-for-profit enterprises generally have no single indicator of performance comparable to a business enterprise's profit. Thus, other indicators of performance are

[10] The authority for setting standards in the government sector has been granted to the Governmental Accounting Standards Board.

usually needed. SFAC No. 4 sets forth two performance indicators for not-for-profit enterprises:

- information about the nature of and relation between inflows and outflows of resources and
- information about service efforts and accomplishments.

Moreover, the performance of not-for-profit enterprises generally is not subject to the test of direct competition in markets to the extent that business enterprises are. [Ref. 31:par. 9]

The aim of general purpose external financial reporting for not-for-profit enterprises is limited. It does not attempt to meet all information needs of those interested in not-for-profit enterprises nor to furnish all the types of information that financial reporting can provide. Nor is general-purpose external financial reporting intended to meet specialized needs of regulatory bodies, some donors or grantors, or others having the authority to obtain the information they need. Rather, general-purpose external financial reporting focuses on providing information to meet the common interests of external users who generally cannot prescribe the information they want from an organization. Those users must use the information that is communicated to them by the organization. The most obvious and important users fitting that description in the non-profit environment are (1) resource providers, (2) constituents (3) governing and oversight bodies, and (4) managers.

> *Resource providers.* Resource providers include those who are directly compensated for providing resources – lenders, suppliers, and employees – and those who are not directly and proportionately compensated – members and contributors.
>
> *Constituents.* Constituents are those who use and benefit from the services rendered by the organization. In some not-for-profit enterprises, constituents include resource providers (for example, members who pay dues) and distinguishing constituents from resource providers may serve no function. However, resource providers and service beneficiaries are largely different groups or individuals in some organizations. The degree to which service beneficiaries are a distinctive part of a constituency depends largely on the extent of separation

between those providing the resources and those using and receiving the service benefits.

Governing and oversight bodies. Governing and oversight bodies are those responsible for setting policies and for overseeing and appraising managers of not-for-profit enterprises. Governing bodies include boards of trustees, boards of overseers or regents, legislatures, councils, and other bodies with similar responsibilities. Oversight bodies also are responsible for reviewing the organization's conformance with various laws, restrictions, guidelines, or other items of a similar nature. Oversight bodies include national headquarters of organizations with local chapters, accrediting agencies, agencies acting on behalf of contributors and constituents, oversight committees of legislatures, and governmental regulatory agencies. In some not-for-profit enterprises, governing bodies commonly are elected representatives of a constituency that is largely comprised of resource providers. In other not-for-profit enterprises, governing bodies may be self-perpetuating through election of their successors.

Managers. Managers of an enterprise are responsible for carrying out the policy mandates of governing bodies and managing the day-to-day operations of an organization. Managers include certain elected officials, managing executives appointed by elected governing bodies, and staff. [Ref. 31:par. 29]

The objectives of financial reporting for not-for-profit enterprises follow from the preceding paragraphs of performance evaluation, uses of financial reports, and users financial reports and follow from the general to the specific.

Resource Allocation. Financial reporting by not-for-profit enterprises should provide information that is useful to present and potential resource providers and other users in making rational decisions about the allocation of resources to those organizations.

Service Assessment. Financial reporting should provide information to help present and potential resource providers and other users in assessing the services that a not-for-profit enterprise provides and its ability to continue to provide those services.

Management Performance. Financial Reporting should provide information that is useful to present and potential resource providers and other users in assessing how managers of a not-for-profit enterprise have discharged their stewardship responsibilities and about other aspects of their performance.

Financial Position. Financial reporting should provide information about the economic resources, obligations, and net resources of an organization, and the

effects of transactions, events and circumstances that change resources and interests in those resources. [Ref. 31:par. 33-35]

2. Private Not-For-Profit Sector Financial Reports

The financial reports that are required by private not-for-profit sector business enterprises have been established by the FASB through SFAS No. 117, "Financial Statements of Not-for-Profit Organizations". This statement establishes standardized financial statements for most not-for-profit enterprises and establishes the requirements for the basic information that must be presented in order to be in conformity with generally accepted accounting principles. Its objective is to enhance the relevance, understandability, and comparability of financial statements issued by not-for-profit enterprises.

The primary purpose of not-for-profit financial statements is to provide relevant information to meet the common interests of donors, members, creditors, and others who provide resources to non-profit enterprises. The financial statements accomplish this by providing information about:

a. The amount and nature of an organization's assets, liabilities and net assets;
b. The effects of transactions and other events and circumstances that change the amount and nature of net assets;
c. The amount and kinds of inflows and outflows of economic resources during a period and the relation between the inflows and outflows;
d. How an organization obtains and spends cash, its borrowing and repayment of borrowing, and other factors that may affect its liquidity; and,
e. The service efforts of an organization.

The individual financial statements required of the not-for-profit enterprises provide different information, and the information each statement provides generally complements information in other financial statements. [Ref. 32:par. 5]

SFAS No. 117 requires that all not-for-profit enterprises provide (1) a statement of financial position, (2) a statement of activities, and (3) a statement of cash flows. It requires reporting amounts for the enterprises total assets, liabilities, and net assets in a

statement of financial position; reporting the change in an enterprises net assets in a statement of activities; and reporting the change in its cash and cash equivalents in a statement of cash flows.

SFAS No 117 also requires classification of a not-for-profit enterprise' net assets and its revenues, expenses, gains, and losses based on the existence or absence of donor-imposed restrictions. It requires that the amounts for each of three classes of net assets - permanently restricted, temporarily restricted, and unrestricted - be displayed in a statement of financial position and that the amounts of change in each of those classes of net assets be displayed in a statement of activities. [Ref. 32:p. 77-79] Table 3-5 provides an explanation of each of these three classes.

Permanent Restriction	A donor-imposed restriction that stipulates that resources be maintained permanently but permits the organization to use up or expend part of the income (or other economic benefits derived from the donated assets.
Temporary Restriction	A donor-imposed restriction that permits the donee organization to use up or expand the donated asset as specified and is satisfied either by the passage of time or by actions of the organization.
Unrestricted	The part of net assets of a non-profit enterprise that is neither permanently restricted or temporarily restricted by donor imposed stipulations.

Table 3-5: Private Not-For-Profit Business Enterprise Asset Classifications

a. Statement of Financial Position

The statement of financial position is synonymous with the balance sheet for private sector business enterprises.[11] It is prepared for the not-for-profit enterprise as a whole and presents the total amount of assets, liabilities, and net assets (formerly fund balance). The information provided in the statement of financial position, used with related disclosures and information in the other financial statements, helps donors, members, creditors, and others to assess (a) the organization's ability to continue to provide services and (b) the organization's liquidity, financial flexibility, ability to meet obligations, and needs for external financing [Ref. 32:par. 9].

[11] Prior to SFAS No. 117, the Statement of Financial Position was known as the Balance Sheet.

The accounting equation for the statement of financial position is:

Assets = Liabilities + Net Assets

The standard format for the statement of financial position for a private sector non-profit business enterprise is presented in Figure 3-8.

b. *Statement of Activities*

The statement of activities reports the changes in net assets of the not-for-profit enterprise and, like the statement of financial position, is prepared for the enterprise as a whole.[12] Also, the statement of activities must report the change in unrestricted, temporarily restricted, and permanently restricted net assets. The statement of activities for not-for-profit enterprises is synonymous with the income statement for private sector business enterprises.

The primary purpose of a statement of activities is to provide relevant information about (a) the effects of transactions and other events and circumstances that change the amount and nature of net assets, (b) the relationships of those transactions and other events and circumstances to each other, and (c) how the organization's resources are used in providing various programs and services. The information provided in the statement of activities, used with related disclosures and information in the other financial statements, helps donors, creditors, members, and others to (1) evaluate the organization's performance during a period, (2) assess an organization's service efforts and its ability to continue to provide services, and (3) assess how an organization's managers have discharged their stewardship responsibilities and other aspects of their performance. [Ref. 32:par. 17]

[12] Prior to SFAS No. 117, the Statement of Activities was known as the Statement of Support, Revenues and Expenses and Changes in Fund Balance.

Assets	Current Funds Unrestricted	Temp. Restricted	Perm. Restricted	Totals
Current Assets				
Cash	xxx	xxx	xxx	xxx
Short-term Securities	xxx	xxx	xxx	xxx
Pledges Receivable	xxx	xxx	xxx	xxx
Grants Receivable	xxx	xxx	xxx	xxx
Supplies	xxx	xxx	xxx	xxx
Total Current Assets	xxx	xxx	xxx	xxx
Non-Current Assets				
Land	xxx			xxx
Buildings	xxx			xxx
Equipment	xxx			xxx
Investments	xxx	xxx	xxx	xxx
Total Non-Current Assets	xxx	xxx	xxx	xxx
TOTAL ASSETS	xxx	xxx	xxx	xxx
Liabilities				
Current Liabilities				
Accrued Expenses	xxx			xxx
Accounts Payable	xxx	xxx	xxx	xxx
Notes Payable	xxx	xxx	xxx	xxx
Total Current Liabilities	xxx	xxx	xxx	xxx
Non-Current Liabilities				
Long Term Debt	xxx	xxx	xxx	xxx
Other	xxx	xxx	xxx	xxx
Total Non-Current Liabilities	xxx	xxx	xxx	xxx
TOTAL LIABILITIES	xxx	xxx	xxx	xxx
Net Assets				
Unrestricted	xxx			xxx
Temporarily Restricted		xxx		xxx
Permanently Restricted			xxx	xxx
TOTAL NET ASSETS	xxx	xxx	xxx	xxx
TOTAL LIABILITIES & NET ASSETS	xxx	xxx	xxx	xxx

Figure 3-8: Private Not-For-Profit Sector Statement of Financial Position Report Format

The accounting equation for the statement of activities is:

Support and Revenues – Expenses and Losses = Change in Net Assets

The standard format for the statement of activities for a private sector non-profit business enterprise is presented in Figure 3-9.

Changes in Unrestricted Net Assets:			
Support, Revenue and Gains			
Support – Contributions	xxx		
Support – Other	xxx		
Investment Income	xxx		
Total Unrestricted Revenues and Gains		xxx	
Net Assets Released from Restrictions:			
Satisfaction of Program Restrictions	xxx		
Satisfaction of Equipment Restrictions	xxx		
Expiration of Time Restrictions	xxx		
Total Assets Released from Restrictions		xxx	
Expenses and Losses:			
Education and Research	xxx		
Fund-Raising	xxx		
Administrative and General Expense	xxx		
Total Expenses and Losses		xxx	
Total Change in Unrestricted Net Assets			**xxx**
Changes in Temporarily Restricted Assets			
Contributions	xxx		
Income on Investments	xxx		
Revenues	xxx		
Net Realized and Unrealized Gains	xxx		
Net Assets Released from Restrictions	xxx		
Total Change in Temporarily Restricted Assets			**xxx**
Changes in Permanently Restricted Assets			
Contributions	xxx		
Income on Investments	xxx		
Revenues	xxx		
Net Realized and Unrealized Gains	xxx		
Net Assets Released from Restrictions	xxx		
Total Change in Permanently Restricted Assets			**xxx**
Total Increases in Net Assets			**xxx**
Net Assets, Beginning of Year			**xxx**
Net Assets, End of Year			**xxx**

Figure 3-9: Private Not-For-Profit Sector Statement of Activities Report Format

c. Statement of Cash Flows

The statement of cash flows reports the not-for-profit business enterprises' cash flows from operating activities, investing activities, and financing activities. Prior to FASB's SFAS No. 117, a statement of cash flows was not required of not-for-profit enterprises. SFAS No. 117, however, amends a number of sections of SFAS No. 95,

"Statement of Cash Flows", to require not-for-profit enterprises to include a statement of cash flows as a part of a complete set of financial statements.

The primary purpose of the statement of cash flows is to provide relevant information about the cash receipts and cash payments of an organization during a period. SFAS No. 95, "Statement of Cash Flows", discusses how that information helps investors, creditors, and others and establishes standards for the information to be provided in a statement of cash flows of a business enterprise.[13] [Ref. 32:par. 29]

The statement of cash flows for a not-for-profit enterprise is nearly identical to that of the private sector "for-profit" enterprises. It allows users to analyze how the enterprise generated cash and how the cash was used by the enterprise. As in the private sector, the accounting model for the statement of cash flows for not-for-profit enterprises is:

Cash (beginning of period)
+/- Cash Flows from Operating Activities
+/- Cash Flows from Investing Activities
+/- Cash Flows from Financing Activities
= Cash (end of period)

The standard format for the statement of cash flows for a private sector not-for-profit business enterprise is presented in Figure 3-10.

[13] SFAS No. 95 originally excluded non-profit enterprises as the FASB was concurrently working on SFAS No. 117.

Cash Flows from Operating Activities		
Change in Net Assets	xxx	
Adjustments to Net Assets		
Depreciation	xxx	
Change in Receivables	xxx	
Change in Inventories	xxx	
Change in Prepaid Expenses	xxx	
Change in Payables	xxx	
Net Cash Flows from Operating Activities		xxx
Cash Flows from Investing Activities		
Change in Physical Assets	xxx	
Sale/Purchase of Investments	xxx	
Net Cash Flows from Investing Activities		xxx
Cash Flows from Financing Activities		
Financing Inflows	xxx	
Financing Outflows	xxx	
Net Cash Flows from Financing Activities		xxx
Net Change in Cash		xxx
Cash (Beginning of Period)		xxx
Cash (End of Period)		xxx

Figure 3-10: Private Not-For-Profit Sector Statement of Cash Flows Report Format

3. Private Not-For-Profit Sector Financial Ratio Analysis Frameworks

Two frameworks for financial ratio analysis of not-for-profit sector business enterprises will be presented. The first framework, presented by Herzlinger and Nitterhouse, uses financial ratios and financial ratio analysis to answer certain fundamental questions about the not-for-profit business enterprise. The second model, presented by Greenlee and Bukovinsky, was originally developed to assist auditors in assessing the financial condition of not-for-profit business enterprises. While both models seek to ultimately assess the financial condition of the not-for-profit business enterprise, they also draw the same conclusion that certain service related information is missing, and essential, to any evaluation of financial condition.

a. Herzlinger/Nitterhouse Framework

The first framework, presented by Regina E. Herzlinger and Denise Nitterhouse, uses financial ratios and financial ratio analysis to answer four fundamental questions about the not-for-profit business enterprise. These questions are:

- Are the organization's goals consistent with the financial resources it needs to accomplish them?
- Is the organization maintaining intergenerational equity?
- Is there an appropriate match between the sources of resources and the uses to which they are put?
- Are present resources sustainable? [Ref. 33:pp. 133-134]

Herzlinger and Nitterhouse continue by pointing out that ratios and financial data do not in themselves answer the four questions. Rather, they assist the decision-maker to understand the current status of the organization, the likely cause of its status, and the appropriate actions that will sustain or improve the organizations future performance. [Ref. 33:p. 135]

(1) Measures of the Consistency between Financial Resources and Activities. Herzlinger and Nitterhouse propose using measures of organizational wealth and asset or activity turnover to measure the consistency between financial resources and activities. They further break down measures of organizational wealth into liquidity and solvency ratios. Liquidity ratios measure the organization's ability to meet its needs for cash in the short term. Solvency ratios measure the organization's reliance on debt in its capital structure and its ability to repay the debt and the related interest charges as they become due over the long term. [Ref. 33:p. 137] Solvency ratios are further broken down into leverage ratios and coverage ratios. Asset or activity turnover ratios measure the use of specific assets and indicate how actively the organization is using its resources to carry out its goals. [Ref. 33:p. 138] Table 3-6 displays the financial ratios for the measurement of consistency between resources and activities.

Ratio Title	Ratio Formula	Ratio Type
Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liab.}}$	Liquidity
Working Capital	Current Assets-Current Liab.	Liquidity
Quick Ratio	$\frac{\text{Cash + MktSec. + Accts Rec.}}{\text{Current Liab.}}$	Liquidity
Dynamic Working Capital	$\frac{\text{Working Capital}}{\text{Cash Flow from Operations (CFO)}}$	Liquidity
Debt to Asset Ratio	$\frac{\text{Total Liab.}}{\text{Total Assets}}$	Solvency (Leverage)
Debt to Equity Ratio	$\frac{\text{Total Liab.}}{\text{Fund Balance}}$	Solvency (Leverage)
Long-Term Debt to Capitalization	$\frac{\text{Long - Term Debt}}{\text{Capitalization}}$	Solvency (Leverage)
Times Interest Earned	$\frac{\text{CFO + Interest Expense}}{\text{Interest Expense}}$	Solvency (Coverage)
Times Fixed Charges	$\frac{\text{Cash Flow + Interest + Fixed Charges}}{\text{Interest + Lease Payments + Fixed Exp.}}$	Solvency (Coverage)
Asset Turnover Ratio	$\frac{\text{Total Revenues}}{\text{Average Total Assets}}$	Asset Management
Fixed Asset Turnover Ratio	$\frac{\text{Total Revenues}}{\text{Average Fixed Assets}}$	Asset Management
Accounts Receivable Turnover Ratio	$\frac{\text{Sales Revenue}}{\text{Accounts Receivable}}$	Asset Management
Days Receivables Ratio	$\frac{\text{Accounts Receivable x 365 Days}}{\text{Sales Revenue}}$	Asset Management
Inventory Turnover Ratio	$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$	Asset Management
Days Inventory Ratio	$\frac{\text{Average Inventory x 365 Days}}{\text{Cost of Goods Sold}}$	Asset Management
Days Payables Ratio	$\frac{\text{Accounts Payable x 365 Days}}{\text{Purchases}}$	Asset Management

Table 3-6: Measures of Consistency between Resources and Activities

(2) Measures of Intergenerational Equity. An organization that does not have sufficient income for maintenance of the purchasing power of its fund balance is said to be using past savings to finance the present. [Ref. 33:p. 139] Consequently, measures of intergenerational equity are intended to measure the extent to

which the not-for-profit business enterprise is engaging in intergenerational transfers. Herzlinger and Nitterhouse divide measures of intergenerational equity into profitability measures and a Return on Fund Balance. Paradoxically, the not-for-profit status is not equivalent to or synonymous with the the absence of profits. "Profit" is referred to as the excess of revenues over expenses, or "surplus". [Ref. 33:pp. 151-152] Generating cash surpluses may be the only way for a not-for-profit entity to survive or expand its ability to serve its client base [Ref. 42:p. 12]. Table 3-7 provides a listing of the ratios that are used to measure intergenerational equity in the Herzlinger/Nitterhouse framework.

Ratio Title	Ratio Formula	Ratio Type
Profit Margin Ratio	$\frac{\text{Surplus}}{\text{Revenues}}$	Profitability
Operating Margin Ratio	$\frac{\text{Surplus Before Interest Exp.}}{\text{Revenues}}$	Profitability
Return on Fund Balance[14]	$\frac{\text{Surplus}}{\text{Fund Balance}}$	Return on Fund Balance

Table 3-7: Measures of Intergenerational Equity

(3) Measures of the Match between Sources and Uses of Funds. Herzlinger and Nitterhouse suggest answering this question requires classifying all revenues, expenses, assets, and liabilities as either short-term or long term. After the classifications have been made, an examination of the relationships between funding sources and funding uses can be conducted and a parity assessment determined. [Ref. 33:p. 140] For example,

$$\frac{\text{Long Term Fixed Expenses}}{\text{Long Term Fixed Revenue}} = 1, >1, \text{ or } < 1$$

Herzlinger and Nitterhouse propose an alternative process to measuring the match between the sources and uses of funds that examines the individual components of expense, and differentiates those that can be controlled by management from those that cannot. [Ref. 33:p. 158]

[14] Another way of looking at the return on fund balance (ROFB) is shown in the following equation: ROFB = (Surplus/Revenues) x (Revenues/Fund Balance) = Profitability x Fund Balance Turnover

(4) Measures of Resource Sustainability. Analysis of resource sustainability attempts to measure whether current organization performance can be sustained by examining the dispersion of assets, liabilities, fund balance, revenues, and expenses. More dispersed resources are generally more sustainable, unless dispersion becomes excessive. Table 3-8 provides a listing of the ratios used to analyze resource sustainability. [Ref. 33:p. 159]

Ratio Title	Ratio Formula	Ratio Type
Common Size Ratio	$\frac{\text{Line Item Amount}}{\text{Total Category}}$	Asset and Capital Dispersion
Expense Ratio	$\frac{\text{Expense Category Amount}}{\text{Total Expenses}}$	Revenue and Expense Dispersion
Fund Raising Return Ratio	$\frac{\text{Revenues from Fund Raising}}{\text{Fund Raising Expense}}$	Revenue and Expense Dispersion
Object of Expense Ratio	$\frac{\text{Object of Expense Amount}}{\text{Total Expenses}}$	Revenue and Expense Dispersion

Table 3-8: Measures of Resource Sustainability

a. Greenlee/Bukovinsky Framework

The second framework, presented by Greenlee and Bukovinsky, was originally developed to assist auditors in assessing the financial condition and results of operations of a not-for-profit business enterprise. They determined that any ratio developed must focus on:

- the availability of sufficient resources to support the mission; and,
- the way in which the resources are used to support the mission.

[Ref. 34:p. 32]

Greenlee and Bukovinsky then categorize their financial ratios into two categories that address these two areas of focus.

(1) Adequacy of Resources to Support the Mission. These ratios help analyze the financial solvency and viability of the not-for-profit over time. They focus on the ability of the not-for-profit to meet current and future financial requirements. [Ref. 34:p. 33] Table 3-9 provides a listing of the ratios used to measure the adequacy of resources to support the mission in the Greenlee/Bukovinsky framework.

Ratio Title	Ratio Formula
Defensive Interval	$\frac{\text{Cash + Mkt. Sec. + Accts. Rec.}}{\text{Average Monthly Expenses}}$
Liquid Funds Indicator	$\frac{\text{Fund Balance - Restricted Endowment - Land - PPE}}{\text{Average Monthly Expenses}}$
Accounts Payable – Aging Indicator	$\frac{\text{Accounts Payable}}{\text{Average Monthly Expenses}}$
Savings Indicator	$\frac{\text{Support \& Revenues - Expenses}}{\text{Total Expenses}}$
Contributions and Grants Ratio	$\frac{\text{Support \& Revenue from Contrib. and Grants}}{\text{Total Revenue}}$
Endowment Ratio	$\frac{\text{Endowment}}{\text{Average Monthly Expenses}}$
Debt Ratio	$\frac{\text{Average Total Debt}}{\text{Average Total Assets}}$

Table 3-9: Measures of Adequacy of Resources to Support Mission

(2) Use of Resources to Support the Mission of the Not-For-Profit. These ratios focus on the efficiency of the not-for-profit in carrying out its mission. Greenlee and Bukovinsy have developed five ratios for this category. Three of the ratios examine the relationship between expense categories and total expense. One ratio attempts to determine the efficiency of raising money. The final ratio measures the efficient use of assets. [Ref. 34:p. 33] Table 3-10 provides a listing of the ratios which measure the use of resources to support the mission of the not-for-profit.

Ratio Title	Ratio Formula
Fundraising Efficiency	$\frac{\text{Total Contribution}}{\text{Fund Raising Expense}}$
Fundraising Expense	$\frac{\text{Fundraising Expense}}{\text{Total Expense}}$
Management Expense	$\frac{\text{Management and General Expense}}{\text{Total Expense}}$
Program Service Expense	$\frac{\text{Program Services Expense}}{\text{Total Expense}}$
Program Service Expense to Total Assets	$\frac{\text{Program Services Expense}}{\text{Average Total Assets}}$

Table 3-10: Measures of the Use of Resources to Support the Mission

C. STATE AND LOCAL GOVERNMENT SECTOR

1. State and Local Government Sector Objectives of Financial Reporting

The Governmental Accounting Standards Board (GASB) promulgates the objectives of financial reporting in the state and local government sector. Since 1984, the GASB has been responsible for establishing standards of financial accounting and reporting for state and local government entities. The mission of the GASB is to establish and improve standards of state and local government accounting and financial reporting that will:

- result in useful information for users of financial reports, and
- guide and educate the public, including issuers, auditors, and users of financial reports. [Ref. 35:p. 1]

The GASB's Concept Statement No. 1, "Objectives of Financial Reporting" presents the goals and objectives of financial reporting and identifies what the GASB believes are the most important objectives of financial reporting by governments.

Concepts Statement No. 1 begins by identifying the uses and users of state and local government accounting and reporting. The GASB believes that accounting and financial reporting standards are essential to the efficient and effective functioning of a democratic system of government because:

- financial reporting plays a major role in fulfilling government's duty to be publicly accountable, and
- financial reporting by state and local governments is used to assess that accountability and to make economic, social, and political decisions. [Ref. 35:p. 1]

Concept Statement No. 1 defines the users of state and local government financial reports as:

- Citizens – to whom government is primarily accountable;
- Legislative and Oversight Bodies – who directly represent the citizens; and,
- Investors and Creditors – who finance government or who participate in the financing process. [Ref. 35:p. 1]

The GASB believes that financial reporting plays a major role in fulfilling government's duty to be publicly accountable to the users stated above in a democratic society. Public accountability is based on the belief that the taxpayer has the "right to know" and the right to receive openly declared facts that may lead to public debate by the citizens and their elected representatives. Use of financial reporting by citizens, legislative and oversight bodies, and investors and creditors to assess accountability is pervasive and is implied in the uses noted above. Financial reporting should also provide information to assist users in assessing inter-period equity by showing whether current year revenues are sufficient to pay for current year services or whether future taxpayers will be required to assume burdens for services previously provided. [Ref. 36:p. 2]

The objectives of financial reporting for state and local government entities as set forth by Concepts Statement No. 1 are:

- Financial reporting should assist in fulfilling government's duty to be publicly accountable and should enable users to assess that accountability by:
    1. Providing information to determine whether current-year revenues were sufficient to pay for current-year services.
    2. Demonstrating whether resources were obtained and used in accordance with the entity's legally adopted budget, and demonstrating

compliance with other finance-related legal or contractual requirements.

3. Providing information to assist users in assessing the service efforts, costs, and accomplishments of the governmental entity.

- Financial reporting should assist users in evaluating the operating results of the governmental entity for the year by:
  1. Providing information about sources and uses of financial resources.
  2. Providing information about how it financed its activities and met its cash requirements.
  3. Providing information necessary to determine whether its financial position improved or deteriorated as a result of the year's operations.
- Financial reporting should assist users in assessing the level of services that can be provided by the governmental entity and its ability to meet its obligations as they become due by:
  1. Providing information about its financial position and condition.
  2. Providing information about its physical and other non-financial resources having useful lives that extend beyond the current year, including information that can be used to assess the service potential of those resources.
  3. Disclosing legal or contractual restrictions on resources and the risk of potential loss of resources. [Ref. 36:par. 74-79]

2. State and Local Government Sector Financial Reports

Financial reports are required for state and local governments for many of the same reasons they are required in the private sector and not-for-profit sector. Hence, many of the same reports for state and local governments mirror those required for the private and not-for-profit sectors. The published general purpose financial statements of state and local governments typically consist of the (1) a combined balance sheet, (2) three operating statements, and (3) a combined statement of cash flows. These financial

reports provide users with an overview of the governmental entity as well as individual fund or account group information.

a. Combined Balance Sheet

The combined balance sheet for state and local government units is very similar to that used for the private sector and the not-for-profit sector. The combined balance sheet represents the balances of the asset, liability, and fund equity accounts as of a specific date. The combined balance sheet includes all fund types, account groups, and discretely presented component units. [Ref. 37:p. 7] The accounting model for the combined balance sheet is:

Assets = Liabilities + Fund Equity Balance

The standard combined balance sheet format for state and local governments is presented in Figure 3-11.

b. Combined Statement of Revenues, Expenditures, and Changes in Fund Balance

The combined statement of revenues, expenditures, and changes in fund balance is the first of the three operating statements. This statement presents the revenues, expenditures, transfers, and other changes in fund balance during a period of time. It is much like the income statement or statement of activities used in the private and not-for-profit sectors respectively. [Ref. 37:p. 7] The accounting model for the combined statement of revenues, expenditures, and changes in fund balance is:

Revenues – Expenditures = Change in Fund Balance

The standard combined statement of revenues, expenditures, and changes in fund balance, report format for state and local governments is presented in Figure 3-12.

<u>**Assets**</u>			
Current Assets			
Cash	xxx		
Property Taxes Receivable	xxx		
Other	<u>xxx</u>		
Total Current Assets		xxx	
Non-Current Assets			
Land	xxx		
Buildings	xxx		
Investments	xxx		
Other	<u>xxx</u>		
Total Non-Current Assets		<u>xxx</u>	
TOTAL ASSETS			<u>**xxx**</u>
<u>**Liabilities**</u>			
Current Liabilities			
Accounts Payable	xxx		
Due to other Funds	xxx		
Other	<u>xxx</u>		
Total Current Liabilities		xxx	
Non-Current Liabilities			
Long Term Bonds	xxx		
Other	<u>xxx</u>		
Total Non-Current Liabilities		<u>xxx</u>	
TOTAL LIABILITIES			**xxx**
<u>**Fund Equity**</u>			
Contributed Capital	xxx		
Fund Balance			
Reserved	xxx		
Unreserved	<u>xxx</u>		
TOTAL FUND EQUITY			<u>**xxx**</u>
TOTAL LIABILITIES. & FUND EQUITY			<u>**xxx**</u>

Figure 3-11: State and Local Government Sector Balance Sheet Report Format

c. Combined Statement of Revenues, Expenditures and Changes in Fund Balance (Budget and Actual)

The combined statement of Revenues, Expenditures and Changes in Fund Balance (Budget and Actual) is the second major operating statement required of state and local government units. The combined statement of revenues, expenditures and changes in fund balance (budget and actual) combines both the budget and actual information contained in the combined statement of revenues, expenditures and changes in fund balance into one report. This report records the budget and actual information in

<u>Revenues</u>		
Property Taxes	xxx	
Fines and Forfeits	xxx	
Other	<u>xxx</u>	
Total Revenues		xxx
<u>Expenditures</u>		
Salaries	xxx	
Supplies and Equipment	xxx	
Interest	xxx	
Other	<u>xxx</u>	
Total Expenditures		<u>xxx</u>
Excess of Revenues over Expenditures		xxx
Fund Balance, Beginning of Period		<u>xxx</u>
Fund Balance, End of Period		xxx

Figure 3-12: State and Local Government Sector Combined Statement of Revenues, Expenditures, and Changes in Fund Balance Report Format

such a way as to permit a comparison between the two. [Ref. 37:p. 8] The accounting model for this report is the same as for the combined statement of revenues, expenditures and changes in fund balance:

$$\text{Revenues} - \text{Expenditures} = \text{Fund Balance}$$

The standard combined statement of revenues, expenditures, and changes in fund balance (budget and actual), report format for state and local governments is presented in Figure 3-13.

d. Combined Statement of Revenues, Expenses and Changes in Retained Earnings

The final operating statement, the combined statement of revenues, expenses and changes in retained earnings, is prepared for all proprietary fund types, similar trust funds and discretely presented component units. [Ref. 37:p. 213] State and Local Governments use a variety of separate accounting entities known as "funds" to control and monitor the revenues and expenses for specific activities. The three general types of funds are governmental, proprietary, and fiduciary. Governmental funds are used to account for general governmental activities. Proprietary funds are used to account for business type activities. Fiduciary funds are used to account for assets entrusted to the

government for a specific purpose (i.e., trust funds). The combined statement of revenues, expenses and changes in retained earnings is required of proprietary fund accounts and similar trust fund accounts as they would carry a retained earnings balance similar to that of a private for-profit business enterprise. The purpose of this report is to show those changes in retained earnings in the proprietary and trust fund types of accounts. The accounting model for this statement is:

Revenues – Expenses = Changes in Retained Earnings

The standard combined statement of revenues, expenditures, and changes in retained earnings, report format for state and local governments is presented in Figure 3-14.

	Budget	Actual	Variance
Revenues			
Property Taxes	xxx	xxx	xxx
Fines and Forfeits	xxx	xxx	xxx
Other	xxx	xxx	xxx
Total Revenues	xxx	xxx	xxx
Expenditures			
Salaries	xxx	xxx	xxx
Supplies and Equipment	xxx	xxx	xxx
Interest	xxx	xxx	xxx
Other	xxx	xxx	xxx
Total Expenditures	xxx	xxx	xxx
Excess of Revenues over Expenditures	xxx	xxx	xxx
Fund Balance, Beginning of Period	xxx	xxx	xxx
Fund Balance, End of Period	xxx	xxx	xxx

Figure 3-13: State and Local Government Sector Combined Statement of Revenues, Expenditures and Changes in Fund Balance (Budget and Actual) Report Format

Revenues		
Property Taxes	xxx	
Fines and Forfeits	xxx	
Other	xxx	
Total Revenues		xxx
Expenditures		
Salaries	xxx	
Supplies and Equipment	xxx	
Interest	xxx	
Other	xxx	
Total Expenditures		xxx
Excess of Revenues over Expenditures		xxx
Retained Earnings, Beginning of Period		xxx
Retained Earnings, End of Period		xxx

Figure 3-14: State and Local Government Sector Combined Statement of Revenues, Expenses and Changes in Retained Earnings Report Format

e. Combined Statement of Cash Flows

The combined statement of cash flows reports the entities cash flows from four primary activities: cash flows from operating activities; cash flows from investing activities; cash flows from non-capital financing activities; and cash flows from capital financing activities. Cash flows from non-capital financing activities and cash flows from capital financing activities are distinguished by whether the cash flow is clearly attributable to the financing of a capital asset acquisition, construction, or improvement [Ref. 50:p. 433]. The combined statement of cash flows is required of all proprietary fund types and discretely presented component units. [Ref. 37:p. 213] The accounting model for the statement of cash flows is:

Cash (beginning of period)
+/- Cash Flows from Operating Activities
+/- Cash Flows from Investing Activities
+/- Cash Flows from Non-Capital Financing Activities
+/- Cash Flows from Capital Financing Activities
= Cash (end of period)

The standard combined statement of cash flows report format for state and local governments is presented in Figure 3-15.

Cash Flows From Operating Activities:		
Inflows from Revenues	xxx	
Outflows from Expenses	xxx	
Net Cash Flows from Operating Activities		xxx
Cash Flows from Investing Activities		
Change in Physical Assets	xxx	
Sale/Purchase of Investments	xxx	
Net Cash Flows from Investing Activities		xxx
Cash Flows from Non-Capital Financing Activities		
Non-Capital Financing Inflows	xxx	
Non-Capital Financing Outflows	xxx	
Net Cash Flows from Non-Capital Financing Activities		xxx
Cash Flows from Capital Financing Activities		
Capital Financing Inflows	xxx	
Capital Financing Outflows	xxx	
Net Cash Flows from Non-Capital Financing Activities		xxx
Net Change in Cash		xxx
Cash (Beginning of Period)		xxx
Cash (End of Period)		xxx

Figure 3-15: State and Local Government Statement of Cash Flows Report Format

3. State and Local Government Sector Financial Ratio Analysis Frameworks

The GASB *Codification* lists fifteen statistical tables a state and local government entity should include in its annual financial reports unless the information is clearly inapplicable to that type of entity. These supplementary disclosures include such things as the ratio of net general bonded debt to assessed value and net bonded debt per capita, the ratio of annual debt service for general bonded debt to total general expenditures, and the computation of the legal debt margin. [Ref. 38:pp. 508-510] Aside from this supplementary information, a number of frameworks have been developed for financial ratio analysis of state and local governments. The three that will be discussed in this thesis are Zehms' framework, the Financial Trend Monitoring System, and the Ten-Point Test of Financial Condition.

a. Zehms' Framework

Karl Zehms developed the first framework for financial ratio analysis of state and local governments that will be presented. Zehms proposed the development of a series of financial ratios for use by municipalities to provide the users of financial reports with some easily understood, broad indications of state and local government operating results and financial condition. He believed a barrier to successfully analyzing the statements of municipal governments was clearly the lack of widely accepted financial reports. A second barrier to performing such analysis was the lack of nation wide norms with which to compare the ratios. [Ref. 39:p. 79]

Based on the user needs (identified by the GASB), Zehms provided 13 financial ratios organized in three broad categories that provide information that would aid in meeting those, specific, user needs. The three broad categories are operating ratios, debt ratios, and capital expenditure ratios. Table 3-11 presents Zehms' ratio framework in the three broad categories.

Ratio	Ratio Type
$\frac{\text{Unreserved Fund Balance of Gen. Revenue Fund}}{\text{Total Assets of Gen. Revenue Fund}}$	Operating
$\frac{\text{Gen. Fund Revenues - Current Year}}{\text{Gen. Fund Revenues - Prior Year}}$	Operating
$\frac{\text{Gen. Fund Expend. - Current Year}}{\text{Gen. Fund Expend. - Prior Year}}$	Operating
$\frac{\text{Gen. Fund Actual Revenues}}{\text{General Fund Budgeted Revenues}}$	Operating
$\frac{\text{Gen. Fund Actual Expend.}}{\text{Gen Fund Budgeted Expend.}}$	Operating
$\frac{\text{Net Income (Loss) All Enterprise Funds}}{\text{Total Enterprise Fund Revenues}}$	Operating
$\frac{\text{Total Debt All Enterprise Funds}}{\text{Total Equity All Enterprise Funds}}$	Debt
$\frac{\text{Net General Long - Term Debt}}{\text{Population}}$	Debt
$\frac{\text{Legal Debt Margin}}{\text{Legal Debt Limit}}$	Debt
$\frac{\text{Debt Service Payments}}{\text{Total Expend.}}$	Debt
$\frac{\text{Annual Capital Project Fund Expend.}}{\text{Population}}$	Capital Expenditure
$\frac{\text{Capital Project Fund Expend.}}{\text{General Fund Expend.}}$	Capital Expenditure

Table 3-11: Zehms' Ratio Framework [Ref. 38:pp. 81-84]

b. Financial Trend Monitoring System Framework

Groves, Godsey, and Shulman, presented another framework for financial ratio analysis of state and local governments in their 1980 work for the International City Management Association. In a 1981 article on their work, they referred to their techniques as "indicator analysis" and described it as a process of:

1. Developing quantifiable measures of financial condition usually in the form of financial, demographic, and economic ratios.

2. Gathering these indicators into an overall system of indicators that highlights the relationship between indicators.

3. Drawing conclusions regarding the financial health of the governmental entity by identifying the changes taking place and analyzing the direction and speed of those changes, and the relationships among the indicators. [Ref. 40:p. 5]

Their article discussed a system of indicators known as the Financial Trend Monitoring System (FTMS). The FTMS identifies and organizes the factors that affect financial condition so that they can be analyzed and, to the extent possible, measured. It is a management tool that pulls together pertinent information from a state or local government's budgetary and financial reports, mixes it with appropriate economic and demographic data, and creates a series of indicators that, when plotted over a period of time, can be used to monitor changes in financial condition. The system does not provide specific answers to why a problem is occurring, nor does it provide a single number or index to measure financial health. It does provide:

- Flags for identifying problems.
- Clues to their causes.
- Time to take anticipatory action. [Ref. 40:p. 9]

The FTMS is built on 12 "factors" representing the primary forces that influence financial condition. Each factor is classified as an environmental, organizational, or a financial factor. The environmental factors affect a state or local government in two ways. First, they create demands and, second, they provide resources. Underlying an analysis of the effects of environmental factors on financial condition is the question: Do they provide enough resources to pay for the demands they make? [Ref. 40:p. 11]

The organizational factors are the government's response to changes in the environmental factors. Underlying an analysis of the effects of organizational factors on financial condition is the question: Do your legislative policies and management practices provide opportunity for appropriate responses to changes in the environment? [Ref. 40:p. 13]

The financial factors reflect the condition of the state or local government's finances. In analyzing the effects of financial factors on financial condition, the underlying question is: Is the government paying the full cost of operations without postponing costs when revenue might not be available to pay these costs? [Ref. 40:p. 13]

Table 3-12 presents a summary of the indicators for the environmental and financial factors. The indicators are the primary tools of the FTMS. Only those indicators that are quantifiable in a meaningful sense are displayed.

Title	Indicator	Factor
Revenues Per Capita	$\frac{\text{Net Operating Revenues}}{\text{Population}}$	Financial
Restricted Revenues	$\frac{\text{Restricted Operating Revenues}}{\text{Net Operating Revenues}}$	Financial
Intergovernmental Revenues	$\frac{\text{Intergov. Operating Revenues}}{\text{Gross Operating Revenues}}$	Financial
Elastic Tax Revenues	$\frac{\text{Elastic Operating Revenues}}{\text{Net Operating Revenues}}$	Financial
One-Time Revenues	$\frac{\text{One - Time Operating Revenues}}{\text{Net Operating Revenues}}$	Financial
Property Tax Revenues	Property Tax Revenues in Constant Dollars	Financial
Uncollected Property Taxes	$\frac{\text{Uncollected Property Taxes}}{\text{Net Property Tax Levy}}$	Financial
User Charge Coverage	$\frac{\text{Revenues from Fees and User Charges}}{\text{Expend. or Related Services}}$	Financial
Revenue Shortfalls	$\frac{\text{Revenue Shortfalls}}{\text{Net Operating Revenues}}$	Financial
Expenditures Per Capita	$\frac{\text{Net Operating Expenditures}}{\text{Population}}$	Financial
Employees Per Capita	$\frac{\text{Number of Municipal Employees}}{\text{Population}}$	Financial
Fixed Costs	$\frac{\text{Fixed Costs}}{\text{Net Operating Expenditures}}$	Financial
Fringe Benefits	$\frac{\text{Fringe Benefit Expenditures}}{\text{Salaries and Wages}}$	Financial

Operating Deficits	Gen. Fund Operating Deficit / Net Operating Revenues	Financial
Enterprise Losses	Enterprise Profits or Losses in Constant Dollars	Financial
General Fund Balances	Unrestict. Fund Balance of Gen. Fund / Net Operating Revenues	Financial
Liquidity	Cash and Short - Term Invest. / Current Liab.	Financial
Current Liabilities	Current Liab. / Net Operating Revenues	Financial
Long-Term Debt	Net Direct Long - Term Debt / Assessed Valuation	Financial
Debt Service	Net Direct Debt Service / Net Operating Revenues	Financial
Overlapping Debt	Overlapping Long - Term Debt / Assessed Valuation	Financial
Unfunded Pension Liability	Unfunded Pension Plan Vested Ben. / Assessed Valuation	Financial
Pension Assets	Pension Plan Assets / Pension Benefits Paid	Financial
Accumulated Employee Leave Liability	Unused Vacation and Sick Leave / Number of Municipal Employees	Financial
Maintenance Effort	Expend. for Maint. of Fixed Assets / Total Fixed Assets	Financial
Level of Capital Outlay	Capital Outlays from Operating Funds / Net Operating Expend.	Financial
Depreciation	Depreciation Expense / Total Fixed Assets	Financial
Personal Income	Personal Income / Population	Environmental
Poverty Households	Poverty Households / Total Households	Environmental
Property Value	Change in Property Value / Property Value Prior Year	Environmental
Residential Development	Market Value of Residential Property / Market Value of Total Property	Environmental
Employment Base	Rate of Unemployment	Environmental
Business Activity	Retail Sales	Environmental

Table 3-12: FTMS Indicator Formulas [Ref. 40:p. 12]

c. *Brown's Framework*

Dr. Kenneth Brown, Southwest Missouri State University, developed a Ten-Point test of financial condition in 1993 as an easy to use technique for the assessment of cities, counties, and school districts. The Ten-Point Test consists of a comparison of ten key ratios for a city, county, or school district with similar entities. The Ten-Point Test measures the following elements of financial condition:

1) Revenues – The ability of annual revenues to finance government services.
2) Expenditures – The manner in which revenues are utilized to provide government services.
3) Operating Position – The extent to which a positive balance between revenues and expenditures exists and the level of sufficiency of liquid assets and reserves.
4) Debt Structure – The level of debt, both short-term and long-term, and the burden of annual principal and interest payments. [Ref. 41:pp. 1-2]

Of the ten key ratios, three measure the adequacy of revenues, one measures the expenditure allocation, three measure operating position liquidity, and three measure the debt structure of the entity. Table 3-13 presents a listing of the 10 key ratios used in the Ten-Point Test and a description of each ratio.

Chapter III presented frameworks for financial ratio analysis in three sectors of the economy: Private For-profit Sector; Private Not-For-Profit Sector; and, State and Local Government Sector. Along with the form and content of the financial reports in each respective sector as well as knowledge of the objectives of federal financial reporting, information contained in this chapter will be useful in establishing examples with which to base a framework for financial ratio analysis of audited federal financial reports.

Chapter IV will now provide archival research information concerning the federal financial reporting environment.

Ratio	Element
$\frac{\text{Total Revenues}}{\text{Population}}$	Revenue
$\frac{\text{Total Gen. Fund Revenues from Own Sources}}{\text{Total General Fund Revenues}}$	Revenue
$\frac{\text{Gen. Fund Sources from Other Funds}}{\text{Total Gen. Fund Sources}}$	Revenue
$\frac{\text{Operating Expend.}}{\text{Total Expend.}}$	Expense
$\frac{\text{Total Revenues}}{\text{Total Expend.}}$	Operating Position
$\frac{\text{Unreserved Gen. Fund Balance}}{\text{Total Gen. Fund Revenues}}$	Operating Position
$\frac{\text{Total Gen. Fund Cash and Invest.}}{\text{Total Gen. Fund Liab.}}$	Operating Position
$\frac{\text{Total Gen Fund Liab.}}{\text{Total Gen. Fund Revenues}}$	Debt Structure
$\frac{\text{Direct Long - Term Debt}}{\text{Population}}$	Debt Structure
$\frac{\text{Debt Service}}{\text{Total Revenues}}$	Debt Structure

Table 3-13: Brown's Ten-Point Test of Financial Condition [Ref. 41:pp. 4-5]

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IV. FEDERAL FINANCIAL REPORTING ENVIRONMENT

The federal government is unique among institutions in the United States. It is obviously distinguishable by its size and expenditures, but the range of activities, the diversity of resources, the nature of obligations, and the extent of its powers also differentiate it [Ref. 38:p. 642]. Federal financial accounting and reporting are shaped by, and need to respond to, the unique characteristics and environment of the federal government including:

- Sovereignty;
- separation of powers;
- federal system of government;
- responsibility for the common defense and general welfare;
- powers to tax, borrow and create money;
- influence of organized interests;
- types of assets;
- responsibility to the news media;
- importance of the budget; and,
- need for special control mechanisms. [Ref. 43:par. 49-70]

Thomas Jefferson believed that every American should be able to understand the finances of the nation, and therefore control them. The U. S. Constitution mandates that the federal government periodically issue financial reports; stating:

> No money shall be drawn from the Treasury, but in consequence of appropriations made by law; and a regular statement and account of the receipts and expenditures of all public money shall be published from time to time. [Ref. 44:Art. I, Sec. IX]

The constitution, however, left Congress and the executive branch to determine the content and the form of the reports. The constitution also left the responsibility for implementing and administering the underlying accounting system of the federal government. [Ref. 38:p. 642] Recent years, however, have seen major institutional change that is providing the impetus for even greater change in federal accounting.

Among these changes are the Chief Financial Officers Act of 1990, the creation of the Federal Accounting Standards Advisory Board, the Government Performance and Results Act of 1993, the Government Management Reform Act of 1994, and the Federal Financial Management Improvement Act of 1996. [Ref. 45:p. 504]

The requirement for standardized financial statements for agencies of the federal government is a relatively recent development. The Chief Financial Officer's Act of 1990, which has been the most significant legislation for federal accounting in recent history, brought about the requirement for standardized financial statements and was very significant in shaping the federal accounting model and hierarchy which exists today. The CFO Act was also the cornerstone for other legislation which has shaped the accounting structure and requirements for the federal government as well.

To provide an understanding of the accounting model and financial statements of the agencies of the United States federal government, this chapter will present the standard setting bodies within the federal government, the recent standard setting legislation, the users and objectives of federal financial reporting, the elements and characteristics of federal accounting, and the form and content of federal financial statements. The information presented in this chapter will be essential in developing a framework for financial ratio analysis based on the current environment in which federal financial accounting and reporting take place.

A. STANDARD SETTING BODIES

Several federal organizations have significant influence on financial management directives, requirements, and trends. In the financial component of accounting and reporting, responsibility centers primarily with four oversight bodies - the Department of the Treasury, the Office of Management and Budget, the General Accounting Office, and the Federal Accounting Standards Advisory Board. Together, these four organizations, encompassing two branches of the federal government (Figure 4-1) set the tone and standard for financial accounting and reporting in the U.S. Government. [Ref. 45:p. 508]

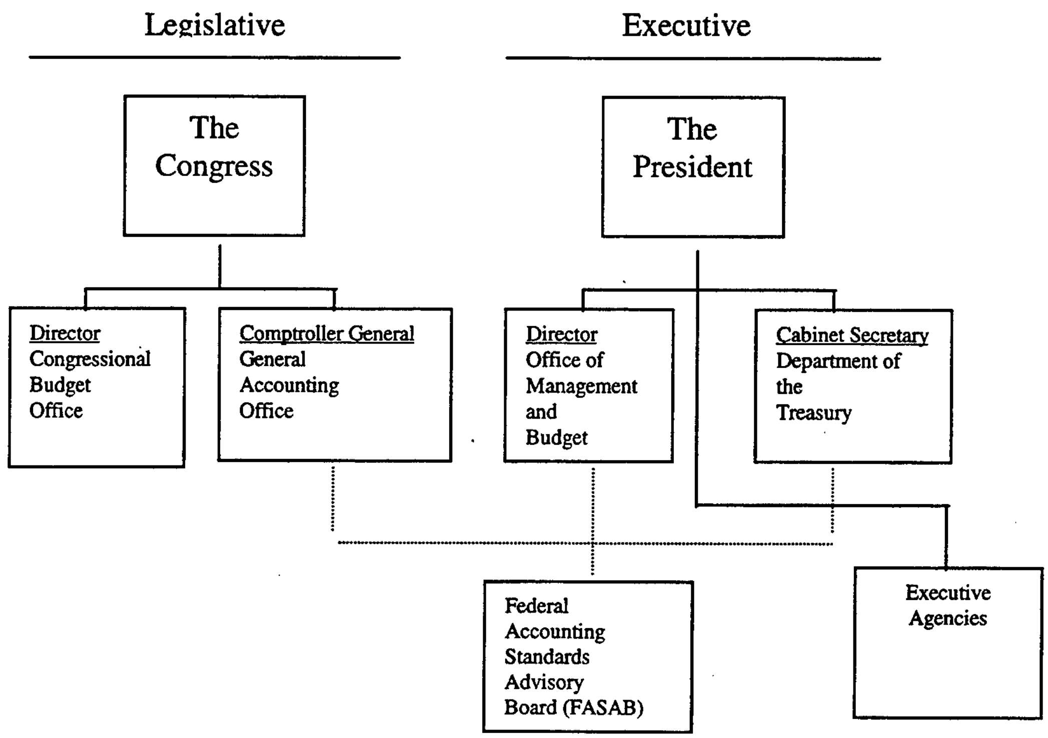

Figure 4-1: Federal Government Financial Management Standard Setting Bodies

1. Department of the Treasury

The Department of the Treasury was created in 1789 to receive, keep and disburse monies of the United States and to account for them [Ref. 45:p. 505]. Today, the Department of the Treasury is responsible for a broad range of financial functions. These include: managing the public debt; collecting receipts and making disbursements; minting coins and printing currency; managing the government's gold supply; and regulating the nations banking system. The mission of the Department of the Treasury is to:

- Promote prosperous and stable American and world economies.
- Manage the government's finances.
- Protect our financial systems and our nation's leaders, and foster a safe and drug free America.
- Continue to build a strong institution for the future. [Ref. 46:p. 1]

The Department of the Treasury accomplishes its mission through the Department's fifteen bureaus (Table 4-1). Of particular interest to government

accounting and reporting is the Department of the Treasury's Financial Management Service (FMS) bureau. The (FMS) is the Federal Government's financial manager. It receives and disburses all public monies, maintains government accounts, and prepares daily and monthly reports on the status of government finances. FMS supports other Federal agencies by serving as the Government's primary disbursing agent; collections agent; accountant and reporter of financial information; and collector of delinquent Federal debt, and performs many of the fundamental cash management functions that were delegated to Treasury when the Department was created by Congress in 1789. Finally, the FMS gathers and publishes Government-wide financial information that is utilized by the public and private sectors to monitor the Government's financial status and establish fiscal and monetary policies. At the same time working with the individual federal agencies to bring greater uniformity to their accounting and reporting practices. [Ref. 47:p. 9-10].

Comptroller of the Currency	Internal Revenue Service	United States Mint
Bureau of Engraving and Printing	Financial Management Service	Bureau of the Debt
Bureau of Alcohol, Tobacco, and Firearms	Office of Thrift Supervision	Federal Law Enforcement Training Center
United States Savings Bond Division	United States Secret Service	United States Customs Service
Financial Crimes Enforcement Network	Community Development Financial Institutions	Treasury Forfeiture Fund

Table 4-1: Bureaus of the Department of the Treasury [Ref. 47:p. 2]

2. The Office of Management and Budget

The Office of Management and Budget's (OMB) predominant mission is to assist the President in overseeing the preparation of the federal budget and to supervise its administration in Executive Branch agencies. In helping to formulate the President's spending plans, OMB evaluates the effectiveness of agency programs, policies, and procedures, assesses competing funding demands among agencies, and sets funding priorities. OMB ensures those agency reports, rules, testimony, and proposed legislation are consistent with the President's budget and with Administration policies. [Ref. 48:p. 1]

In addition, OMB oversees and coordinates the Administration's procurement, financial management, information, and regulatory policies. In each of these areas, OMB's role is to help improve administrative management, to develop better performance measures and coordinating mechanisms, and to reduce any unnecessary burdens on the public. [Ref. 38:p. 643] OMB has the authority to prescribe the form and content of financial statements and other administrative reports pursuant to the Chief Financial Officer's (CFO) Act of 1990, a power that it exercises by issuing bulletins and circulars that establish reporting, cost accounting, auditing and procurement standards. [Ref. 45:p. 507]

The OMB has the further responsibility of apportioning federal appropriations to the agencies of the federal government. An apportionment is a share of the total appropriation appropriated by Congress. The apportionment process helps to ensure that an agency does not dissipate its resources prior to year-end and gives the executive branch added control over its spending. [Ref. 38:pp. 643-644]

OMB is composed of divisions organized either by Agency and program area or by functional responsibilities. However, the work of OMB often requires a broad exposure to issues and programs outside of the direct area of assigned responsibility. Table 4-2 outlines the agency/program areas and their responsibilities. [Ref. 49:p. 1]

3. The General Accounting Office

The General Accounting Office (GAO) is most closely identified with its role as the government's auditor, conducting both financial and performance examinations of federal organizations and programs [Ref. 50:p. 760]. Generally speaking, the GAO is the investigative arm of the Congress and is charged with examining all matters relating to the receipt and disbursement of public funds.

AGENCY/PROGRAM	RESPONSIBILITY
Resource Management Offices	RMOs develop and support the President's management and budget agenda. These offices play a pivotal role in the annual negotiations with Congress over Federal fiscal policies, and provide ongoing policy and management guidance to Federal agencies. RMOs are organized by policy subject coinciding with the agencies under their purview. Staff in these offices become experts in their program and policy areas and are responsible for the analysis, evaluation, and implementation of policy options as well as the implementation of government-wide management initiatives.
Budget Review	The Budget Review offices analyze trends in and the consequences of aggregate budget policy. They provide strategic and technical support for budget decision-making and negotiations, and they monitor Congressional action on spending legislation. In addition, these offices provide technical expertise in budget concepts and execution.
Legislative Programs	The Legislative Reference Division coordinates articulation of the Administration's position on legislation. These offices coordinate the review and clearance of the Administration's legislative proposals and statements on bills progressing through Congress. This responsibility frequently requires resolution of conflicting agency views on legislation and negotiation of policy positions that respect the President's legislative priorities and program.
Statutory Offices	The Office of Federal Financial Management develops and provides direction on the implementation of financial management policies and systems. The Office of Federal Procurement Policy coordinates efforts to improve Federal procurement law, policies, and practices, which affect all Federal and federally assisted purchases of goods, property, and services. The Office of Information and Regulatory Affairs (OIRA) oversees the Federal regulations and information requirements, and develops policies to improve government statistics and information management.

Table 4-2: Agency/Program of the Office of Management and Budget [Ref. 49:p. 2]

The GAO was established by the Budget and Accounting Act of 1921 (31 U.S.C. 702), to independently audit Government agencies. The act specified that the GAO was to be "independent of the executive departments and under the control and direction of the Comptroller General of the United States." The Reorganization Act of 1945 made it clear that the GAO was a part of the legislative branch and, over the years, Congress has

expanded GAO's audit authority, added new responsibilities and duties, and strengthened GAO's ability to perform independently. [Ref. 38:p. 644]

Since 1950, the United States Code (31 U.S.C. 3511) has assigned the Comptroller General responsibility for prescribing the accounting principles, standards, and related requirements to be observed by each executive agency in the development if its accounting system. However, the executive branch has never acknowledged the constitutional authority of the Comptroller General to set accounting standards for the executive branch. Moreover, the Chief Financial Officers Act of 1990 assigns significant responsibility for establishing policies and procedures for approving and publishing accounting principles and standards to the Director of the Office of Management and Budget. Thus, both under law and in fact, the responsibility for prescribing accounting principles and standards is now a joint responsibility. [Ref. 45:p. 505]

While the GAO is most closely associated with audits, it carries out other duties as well. Table 4-3 outlines the four primary activities of the GAO.

ACTIVITY	FUNCTION
Audits and Evaluations	Supporting the Congress is GAO's fundamental responsibility. In meeting this objective, GAO performs a variety of services, the most prominent of which are audits and evaluations of Government programs and activities. The majority of these reviews are made in response to specific congressional requests. The GAO is required to perform work requested by committee chairpersons and, as a matter of policy, assigns equal status to requests from ranking minority Members. Other assignments are initiated pursuant to standing commitments to congressional committees while other reviews are specifically required by law. Finally, some assignments are independently undertaken in accordance with GAO's basic legislative responsibilities.
Accounting and Information Management Policy	The GAO ensures that the Congress has available for its use current, accurate, and complete financial management data. To do this, GAO: • Prescribes accounting principles and standards for the executive branch; • Advises other Federal agencies on fiscal and related policies and procedures; and • Prescribes standards for auditing and evaluating Government programs. In addition, the Comptroller General, the Secretary of the Treasury, and the Director of the Office of Management and Budget develop standardized information and data processing systems. This includes standard terminology, definitions, classifications, and codes for fiscal, budgetary, and program-related data and information.
Legal Service	In response to inquiries from committees and Members, the Comptroller General provides advice on legal issues involving Government programs and activities. GAO is also available to assist in drafting legislation and reviewing legislative proposals before the Congress. In addition, GAO reviews and reports to the Congress on proposed rescissions and deferrals of Government funds. Other legal services include resolving bid protests that challenge Government contract awards, assisting Government agencies in interpreting the laws governing the expenditure of public funds, and adjudicating claims for and against the Government. In addition, GAO's staff of trained investigators conducts special investigations and assists auditors and evaluators when they encounter possible criminal and civil misconduct. When warranted, GAO refers the results of its investigations to the Department of Justice and other law enforcement authorities.
Reporting Authorities	The GAO offers a range of products to communicate the results of its work. Products include testimony, oral briefings, and written reports. All of GAO's unclassified reports are available to the public; however, GAO will honor a requester's desire to postpone release of a report for up to 30 days. The report will be made public automatically following the requester's release or public disclosure of the report's contents.

Table 4-3: Primary Activities of the General Accounting Office [Ref. 51:pp. 1-4]

4. Federal Accounting Standards Advisory Board

The Federal Accounting Standards Advisory Board (FASAB) is responsible for recommending federal accounting standards to the Board's principals after considering the financial and budgetary information needs of congressional oversight groups, executive agencies, and the needs of other users of Federal financial information.

The FASAB was established in 1990 by the Secretary of the Treasury, the Director of the Office of Management and Budget, and the Comptroller General of the United States. The FASAB was created to consider and recommend accounting standards and principles for the Federal Government to improve the usefulness of Federal financial reports. The FASAB's recommendations are made to the Secretary of the Treasury, the Director of the Office of Management and Budget, and the Comptroller General of the United States, who are referred to as the Board's principals. [Ref. 52:p. 1]

According to OMB Circular A-134, the role of the FASAB is to:

> deliberate upon and make recommendations to the Principals on accounting principles and standards for the Federal Government and its agencies. The MOU [Memorandum of Understanding] states that if the Principals agree with the recommendations, the Comptroller General and the Director of the OMB will publish the accounting principles and standards. [Ref. 53:par. 2]

When the FASAB's principals adopt them, the recommendations are published as Statements of Federal Financial Accounting Standards (SFFAS). These SFFAS' are the body of standards that are considered to be Federal generally accepted accounting principles. The authoritative status of SFFASs is made clear by OMB Circular A-134:

> SFFASs shall be considered generally accepted accounting principles (GAAP) for Federal Agencies. Agencies shall apply the SFFASs in preparing financial statements in accordance with the requirements of the Chief Financial Officers Act of 1990. Auditors shall consider SFFASs as authoritative references when auditing financial statements. [Ref. 53:par. 5.b]

The FASAB is composed of nine part-time members selected from a broad range of Federal Government Agencies as well as the non-federal community. The FASAB is made up of:

- one member from the Department of the Treasury,
- one member from the Office of Management and Budget,
- one member from the General Accounting Office,
- one member from the Congressional Budget Office,
- one member from the defense and international agencies,
- one member from the civilian agencies, and
- three non-federal members selected from the general financial community, the accounting and auditing community, and academia.

The FASAB is designed to be a deliberative body that is independent of specific agency or regulatory control, but one that brings to the discussion table the unique needs and requirements of Federal agencies. The Board's composition is designed to ensure that the needs of the federal financial management community are considered in setting accounting and reporting standards. [Ref. 50:pp. 760-761]

The FASAB believes that accounting and financial reporting standards are essential for public accountability and for an efficient and effective functioning of our democratic system of government. Thus, federal accounting standards and financial reporting play a major role in fulfilling the government's duty to be publicly accountable. Federal accounting standards and federal financial reporting can be used to (1) assess the government's accountability and its efficiency and effectiveness, and (2) contribute to the understanding of the economic, political, and social consequences of the allocation and various uses of federal resources. [Ref. 52:p. 1]

To assist in resolving issues related to the implementation of SFFAS, the FASAB established the Accounting and Auditing Policy Committee (AAPC). The AAPC is a task force of the FASAB and is charged with the timely identification, discussion, and resolution of accounting and auditing issues within the framework of the FASAB's authoritative pronouncements. The efforts of the AAPC result in authoritative implementation guidance for preparers and auditors of Federal financial statements in connection with the implementation of SFFAS and OMB Form, Content, and Audit Bulletins. [Ref. 54:p. 1]

To date, the FASAB and AAPC have released 35 documents related to Federal financial accounting and reporting. The FASAB is following the general pattern established by the FASB, which attempts to issue standards consistent with its several "Statements of Financial Accounting Concepts" and the GASB which looks to its "Concepts Statements" [Ref. 45:p. 510]. The statements on concepts are more general than statements of standards and do not contain specific recommendations that would, when issued by the Board's sponsors, become authoritative requirements for federal agencies and auditors. Instead, statements on concepts, after approval by the Board's sponsors, provide general guidance to the FASAB itself as it deliberates on specific issues. They also help others to understand financial accounting and financial reports. [Ref. 43:par. 1-2] The FASAB also issues exposure drafts known as Statment of Recommended Accounting Concepts (SRACs) and Statements of Recommended Accounting Standards (SRASs). SRACs and SRASs are used to solicit feedback and engender discussion on the concepts and standards prior to their official implementation. Finally, the FASAB issues Technical Releases (TRs) to provide additional implementation guidance on SFFACs and SFFASs. Table 4-4 provides a listing of these documents as well as their date of inception.

NUMBER	TITLE	DATE
SFFAC 1	Objectives of Federal Financial Reporting	9/2/93
SFFAC 2	Entity and Display	6/6/95
SRAC 3	Management's Discussion & Analysis	Apr-99
SFFAS 1	Accounting for Selected Assets and Liabilities	3/30/93
SFFAS 2	Accounting for Direct Loans and Loan Guarantees	8/23/93
SFFAS 3	Accounting for Inventory and Related Property	10/27/93
SFFAS 4	Managerial Cost Accounting Concepts & Standards	7/31/95
SFFAS 5	Accounting for Liabilities of the Federal Government	12/20/95
SFFAS 6	Accounting for Property, Plant & Equipment (PP&E)	11/30/95
SFFAS 7	Accounting for Revenue and Other Financing Sources	5/10/96
SFFAS 8	Supplementary Stewardship Reporting	6/11/96
SFFAS 9	Deferral of Implementation Date for SFFAS 4	10/3/97
SFFAS 10	Accounting for Internal Use Software	10/9/98
SFFAS 11	Amendments to Accounting for PP&E – Definitions	12/15/98
SFFAS 12	Recognition of Contingent Liabilities from Litigation	2/5/99
SFFAS 13	Deferral of Para.65.2-Material Rev.-Related Transactions	2/5/99
SRAS 14	Amendments to Deferred Maintenance Reporting	Apr-99
SRAS 15	Management's Discussion & Analysis	Apr-99
SRAS 16	Amendments to Accounting for PP&E – Multi-Use Heritage Assets	Jul-99
N/A	Government-wide Supplementary Stewardship Reporting	Jun-97
N/A	Accounting for Social Insurance	2/20/98
N/A	Amendments to Accounting for Property, Plant & Equipment	Feb-98
N/A	Amendments to Accounting for Direct Loans and Loan Guarantees	Mar-99
N/A	Accounting for the Cost of Capital by Federal Entities	Jul-96
I –1	Reporting on Indian Trust Funds	3/12/97
I –2	Accounting for Treasury Judgment Fund Transactions	3/12/97
I- 3	Measurement Date for Pension and Retirement Health Care Liabilities	8/29/97
I- 4	Accounting for Pension Payments in Excess of Pension Expense	12/19/97
I- 5	Recognition by Recipient Entities of Receivable Nonexchange Revenue	Dec-98
Report 1	Overview of Federal Financial Accounting Concepts and Standards	12/31/96
Volume 1	FASAB Volume 1, Original Statements	Mar-97
TR 1	Audit Legal Letter Guidance	3/1/98
TR 2	Environmental Liabilities Guidance	3/15/98
TR 3	Preparing and Auditing Estimates for Direct and Guaranteed Loans	Feb-99
TR 4	Reporting on Non-valued Seized and Forfeited Property	07/31/99

Table 4-4: Documents Issued by the FASAB and AAPC

B. STANDARD SETTING LEGISLATION

1. Chief Financial Officer (CFO) Act of 1990

The Chief Financial Officer (CFO) Act, enacted into law by the 101st Congress in 1990, significantly changed the workings of the federal financial management system and is considered by many to be the most comprehensive financial reform package in 40 years. [Ref. 55:p. 1] The CFO Act was the culmination of many years of attempts a financial management reform. Congress found the financial management function lacking in many areas that were summed up in the following findings:

- General management functions of the Office of Management and Budget need to be significantly enhanced to improve the efficiency and effectiveness of the Federal Government.
- Financial management functions of the Office of Management and Budget need to be significantly enhanced to provide overall direction and leadership in the development of a modern Federal financial management structure and associated systems.
- Billions of dollars are lost each year through fraud, waste, abuse, and mismanagement among the hundreds of programs in the Federal Government.
- These losses could be significantly decreased by improved management, including improved central coordination of internal controls and financial accounting.
- The Federal Government is in great need of fundamental reform in financial management requirements and practices as financial management systems are obsolete and inefficient, and do not provide complete, consistent, reliable, and timely information.
- Current financial reporting practices of the Federal Government do not accurately disclose the current and probable future cost of operating and investment decisions, including the future need for cash or other resources, do not permit adequate comparison of actual costs among executive agencies, and

do not provide the timely information required for efficient management of programs. [Ref. 56:sec. 102(a)]

The purpose of the act was to correct these deficiencies. The Act requires government agencies to improve financial reporting by integrating financial systems, improving internal control procedures, achieving compliance with federal accounting principles, and preparing audited financial statements. The CFO act established a Chief Financial Officer for the United States Government. This individual, also the Deputy Director for Management in the Office of Management and Budget (OMB), is responsible for financial management in the United States Government. The Act also created the Office of Federal Financial Management in OMB. A Controller who serves as the Deputy Chief Financial Officer heads this office. The CFO Act also established an infrastructure of Chief Financial Officers within the fourteen departments and ten major agencies of the executive branch (Table 4-5).[15] [Ref. 57:p. 15]

Department of Defense	Department of Commerce	Department of Agriculture	Department of Education
Department of Energy	Department of Health and Human Services	Department of Housing and Urban Development	Department of the Interior
Department of Justice	Department of Labor	Department of State	Department of Transportation
Department of Treasury	Department of Veterans Affairs	Agency for International Development	Environmental Protection Agency
Federal Emergency Management Agency	General Services Administration	National Aeronautics and Space Administration	National Science Foundation
Nuclear Regulatory Commission	Office of Personnel Management	Small Business Administration	Social Security Administration

Table 4-5: Departments and Agencies of the Executive Branch [Ref. 56:sec. 901]

In order to accomplish the objectives of the CFO Act, the act mandates federal agencies to perform the following:

[15] The CFO Act originally applied to 14 departments and 9 major agencies; however, the Social Security Administration was later added to arrive at the current number of 14 departments and 10 major agencies.

- Utilize an integrated accounting and financial management system, including financial reporting and internal controls.
- Comply with applicable federal accounting principles and standards.
- Provide information that is responsive to management needs.
- Prepare financial statements for revolving funds, trust funds, and commercial activities.

The major initiative of the CFO Act and central to this thesis was the requirement for the preparation of auditable consolidated financial statements for the federal government. Government agencies are also required to submit an annual management report to Congress no later than 180 days after the end of the fiscal year. The management report is required to include:

- A statement of financial position.
- A statement of operations.
- A statement of cash flow.
- A reconciliation to the budget report, if applicable.
- A statement on internal accounting and administrative control systems by the head of federal agencies.
- Any other comments and information necessary to inform Congress about the operations and financial condition of the agency. [Ref. 56:sec. 3515]

2. Government Performance and Results Act (GPRA) of 1993

The Government Performance and Results Act (GPRA) was enacted into law by Congress in 1993. This legislation was intended to reform federal government by requiring federal agencies to develop strategic plans describing their overall goals and objectives, and annual performance plans containing quantifiable measures of progress towards meeting the goals and objectives. Federal agencies are required to submit performance reports outlining their success in meeting standards and measures outlined in their performance plans. [Ref. 58]

Like the CFO Act, the GPRA of 1993 was enacted based upon findings of deficiencies within the federal government. These findings included:

- waste and inefficiency in Federal programs undermine the confidence of the American people in the Government and reduces the Federal Government's ability to address adequately vital public needs;
- federal managers are seriously disadvantaged in their efforts to improve program efficiency and effectiveness, because of insufficient articulation of program goals and inadequate information on program performance; and
- congressional policymaking, spending decisions and program oversight are seriously handicapped by insufficient attention to program performance and results. [Ref. 58:sec. 2(a)]

The purpose of the GPRA of 1993 was to address these findings by:

- Improving the confidence of the American people in the capability of the federal government by systematically holding federal agencies accountable for achieving program results.
- Initiate program performance reform through a series of pilot projects in setting program goals, measuring program performance against those goals, and reporting publicly their progress.
- Improve federal program effectiveness and public accountability by promoting a new focus on results, service quality, and customer satisfaction.
- Help financial managers improve service delivery by requiring that they plan for meeting program objectives and by providing them with information about program results and service quality.
- Improve congressional decision making by providing more objective information on achieving statutory objectives, and on the relative effectiveness and efficiency of federal programs and spending.
- Improve internal management of the federal government. [Ref. 58:sec. 2(b)]

The GPRA is designed to provide Congress and the policy-makers with reliable information concerning strategic plans, performance plans, and performance reports.

Under this act, federal agencies will move away from simply measuring inputs, activities, and outputs to measuring outcomes. This change in how federal agencies are managed will hopefully improve the American people's confidence in the federal government.

3. The Government Management Reform Act (GMRA) of 1994

Congress enacted the Government Management Reform Act (GMRA) into law in 1994. This Act was implemented with the objective of gaining control of federal finances. The Act requires annual audited financial reports covering in full the activities of the earlier Chief Financial Officers Act departments and agencies of the government and establishes programs designed to increase efficiency and cut operating costs within executive agencies. The Act expands the coverage of the Chief Financial Act and requires twenty four government departments and agencies to submit yearly audited financial reports of their activities, spending, and revenue to the Director of the Office of Management and Budget. [Ref. 59:p. 2]

The GMRA stipulates that the government will use electronic funds transfer (EFT) rather than conventional checks to reimburse people who begin receiving federal salary for federal retirement payments after January 1, 1995. The Act also authorized six executive agencies to create pilot franchising operations, allowing them to lower costs and share administrative support services with other agencies. [Ref. 60:sec. 402-403]

The GMRA also broadened the coverage of the CFO Act of 1990 to mandate federal agencies with various funds accounts to prepare annual audited financial statements. Additionally, by 1998, the government must produce a consolidated financial statement that will "reflect the overall financial position, including assets and liabilities, and results of operations of the executive branch of the United States Government" [Ref. 60:sec. 405(b)]. The Act is congressional reform intended to improve the way the federal agencies and departments operate to enhance the quality of service and promote cost savings measures.

4. The Federal Financial Management Improvement Act (FFMIA) of 1996

Congress enacted the Federal Financial Management Act (FFMIA) in 1996. This act was implemented to improve federal accounting practices and enhance the ability of the government to provide more reliable, useful financial information. One of the key objectives of the FFMIA is to build on the three previous financial management legislation, the Chief Financial Officer Act of 1990, the Government Performance and Results Act of 1993, and the Government Management Reform Act of 1994. Congress believed that, although this previous legislation had been passed, there were still serious deficiencies in federal financial management. These deficiencies included:

- Much effort has been devoted to strengthening Federal internal accounting controls in the past. Although progress has been made in recent years, Federal accounting standards have not been uniformly implemented in financial management systems for agencies.
- Federal financial management continues to be seriously deficient, and Federal financial management and fiscal practices have failed to (a) identify costs fully; (b) reflect the total liabilities of congressional actions; and (c) accurately report the financial condition of the Federal Government.
- Current Federal accounting practices do not accurately report financial results of the Federal Government or the full costs of programs and activities. The continued use of these practices undermines the Government's ability to provide credible and reliable financial data and encourages already widespread Government waste, and will not assist in achieving a balanced budget.
- Waste and inefficiency in the Federal Government undermine the confidence of the American people in the government and reduce the federal Government's ability to address vital public needs adequately.
- To rebuild the accountability and credibility of the Federal Government, and restore public confidence in the Federal Government, agencies must incorporate accounting standards and reporting objectives established for the

Federal Government into their financial management systems so that all the assets and liabilities, revenues, and expenditures or expenses, and the full costs of programs and activities of the Federal Government can be consistently and accurately recorded, monitored, and uniformly reported throughout the Federal Government.

- Since its establishment in October 1990, the FASAB has made substantial progress toward developing and recommending a comprehensive set of accounting concepts and standards for the Federal Government. When the accounting concepts and standards developed by FASAB are incorporated into Federal financial management systems, agencies will be able to provide cost and financial information that will assist the Congress and financial managers to evaluate the cost and performance of Federal programs and activities, and will therefore provide important information that has been lacking, but is needed for improved decision making by financial managers and the Congress.
- The development of financial management systems with the capacity to support these standards and concepts will, over the long term, improve Federal financial management. [Ref. 61:sec. 802(a)]

The FFMIA mandated that each agency shall implement and maintain financial management systems that comply substantially with federal financial management systems requirements, applicable Federal accounting standards, and the United States Government Standard General Ledger at the transaction level. The FFMIA additionally mandated that auditors for each of the major federal agencies and departments to report whether the financial management systems of the agency or department are in compliance with Federal Financial Management Systems Requirements (FFMSR), Federal Accounting Standards (FAS) and the Standard Government Ledger (SGL) at the transaction level. The Federal Financial Management System Requirements (FFMSR) are standards for agencies to follow in developing, operating, evaluating, and reporting on financial management statements. [Ref. 61:sec. 803] This was a major step in improving

the quality of audited federal financial reports which was one of the major weaknesses identified in producing usable federal financial reports. [Ref. 62:p. 68]

FFMIA was designed as a link between the CFO Act of 1990, the GPRA of 1993, and the GMRA of 1996 to enhance the overall financial reporting and accountability of the government agencies. The objective is to increase the quality of the government by improving federal accounting practices and enhancing the ability of the government to provide reliable, useful financial information.

C. USERS AND OBJECTIVES OF FEDERAL FINANCIAL REPORTING

The users and objectives of Federal financial reporting have been promulgated by the FASAB. Upon its establishment in 1990, the FASAB set out to develop, from the ground up, a fundamental model of federal accounting and reporting for both the federal government and its individual components. As one of its first projects, the FASAB established a set of financial reporting objectives. In doing so, the FASAB laid the foundation for resolving accounting and reporting issues in the near and long term.

SFFAC No. 1, "Objectives of Federal Financial Reporting", issued in 1993, is the FASAB's conceptual statement on the objectives of financial reporting by the federal government. SFFAC No. 1 focuses on and defines the uses, user needs, and objectives of Federal financial reporting. The objectives are designed to guide the FASAB in developing accounting standards to enhance the financial information reported by the federal government to:

a) demonstrate its accountability to internal and external users of federal financial reports;
b) provide useful information to internal and external users of federal financial reports; and,
c) help internal users of financial information improve the government's management.

These objectives reflect the federal environment in which the users of federal financial reports must operate. [Ref. 43:par. 3]

The federal government derives its powers from the consent of the people. Following from that, it has a special responsibility to report on its actions and the results of those actions. Federal financial reports must accurately reflect the unique nature of the federal government and must provide information that is not only useful to the governed but also to those charged with its management. Providing this information to the public, the news media, and elected officials is an essential part of accountability in government. Providing this information to program managers, executives and members of Congress is essential to planning and conducting government functions economically, efficiently, and effectively for the benefit of society. [Ref. 43:par. 8]

The FASAB believes that it is necessary to initially define the users and the needs of the users of federal financial reporting prior to defining the objectives of federal financial reporting. This is in part based upon the premise that the objectives of federal financial reporting must relate to the needs/wants of a specific stakeholder group. SFFAC No. 1 defines the users of federal financial reporting as the citizens, Congress, executives, and program managers. [Ref. 43:par. 75] Table 4-6 displays the users of federal financial reporting and their particular needs. In summary, the users of federal financial reporting want information relating to budgetary integrity, operating performance, stewardship, and systems and control.

Citizens	Citizens are interested in many aspects of the federal government. They are concerned about individual programs, candidates for office, the services the government provides, and the fiscal responsibility of their elected and appointed representatives. Citizens receive and pay for government services and therefore are concerned with the outputs and outcomes of those services and the efficiency with which they are provided. Citizens are concerned about their families and, in particular, with the financial burden their children will inherit.
Congress	Congress participates along with the administration in the basic decisions that describe the intent of government. Such decisions include passing laws in response to public demand, allocating resources among competing programs, and establishing policy that affects various aspects of the country's economic and social life. Congress' decisions are often influenced by assessing costs and benefits and by considering the effect of the government's aggregate financial requirements and impact on the economy.
Executives	Executives, like Congress, are concerned with the government's goals, objectives, and policies. Executives focus on the strategic plans and programs that are intended to achieve presidential and congressional goals and to implement their policies. In particular, government executives pay attention to budgets that, from the perspective of each agency, are the source of the resources needed to achieve goals and to implement policies.
Program Managers	Program managers establish operating procedures for their programs and manage them within the limits of the spending authority granted by Congress. They select, supervise, and evaluate personnel and make sure that program inventory and facilities are acquired economically, maintained adequately, and used efficiently. Program managers need to be able to provide information to enable executives and Congress to monitor their programs.

Table 4-6: Users of Federal Financial Reporting [Ref. 43:par. 76-87]

The objectives of federal financial reporting flow directly from the needs of the users of federal financial reports. The concerns of the citizens, Congress, executives, and program managers define the following objectives of federal financial reporting: Budgetary Integrity; Operating Performance; Stewardship; and Systems and Control. [Ref. 43:par. 110] Table 4-7 outlines the objectives of federal financial reporting and the elements of each as defined by SFFAC No. 1.

Budgetary Integrity	Federal financial reporting should assist in fulfilling the government's duty to be publicly accountable for monies raised through taxes and other means and for their expenditure in accordance with the appropriations laws that establish the government's budget for a particular fiscal year and related laws and regulations. Federal financial reporting should provide information that helps the reader to determine • how budgetary resources have been obtained and used and whether their acquisition and use were in accordance with the legal authorization, • the status of budgetary resources, and • how information on the use of budgetary resources relates to information on the costs of program operations and whether information on the status of budgetary resources is consistent with other accounting information on assets and liabilities.
Operating Performance	Federal financial reporting should assist report users in evaluating the service efforts, costs, and accomplishments of the reporting entity; the manner in which these efforts and accomplishments have been financed; and the management of the entity's assets and liabilities. Federal financial reporting should provide information that helps the reader to determine • the costs of providing specific programs and activities and the composition of, and changes in, these costs, • the efforts and accomplishments associated with federal programs and the changes over time and in relation to costs, and • the efficiency and effectiveness of the government's management of its assets and liabilities.
Stewardship	Federal financial reporting should assist report users in assessing the impact on the country of the government's operations and investments for the period and how, as a result, the government's and the nation's financial conditions have changed and may change in the future. It should enable the reader to determine whether • the government's financial position improved or deteriorated over the period, • future budgetary resources will likely be sufficient to sustain public services and to meet obligations as they come due, and • government operations have contributed to the nation's current and future well being.
Systems and Control	Federal financial reporting should assist report users in understanding whether financial management systems and internal accounting and administrative controls are adequate to ensure that • transactions are executed in accordance with budgetary and financial laws and other requirements, consistent with the purposes authorized, and are recorded in accordance with federal accounting standards, • assets are properly safeguarded to deter fraud, waste, and abuse, and • performance measurement information is adequately supported.

Table 4-7: Objectives of Federal Financial Reporting [Ref. 43:par. 112-150]

D. ELEMENTS AND CHARACTERISTICS OF FEDERAL ACCOUNTING

1. Two-Track Accounting System

The accounting system of a federal agency must have the capability to provide information needed for financial management as well as information needed to determine that agencies have complied with the budgetary and other legal requirements. This requires federal agency accounting to be based on a two-track system. One track is a self-balancing set of proprietary accounts, the purpose of which is to provide information for agency management. The second track is a set of self-balancing budgetary accounts needed to assure that the available budgetary resources and authority are not overexpended or overobligated. This track is also required to facilitate standardized budgetary reporting requirements. The differences between the two tracks are shown in Table 4-8. [Ref. 45:p. 526]

Budgetary Accounting	Proprietary Accounting
Entries are made for commitment of funds in advance of preparing orders to procure goods and services	Entries are not made for commitments
Entries are made for obligation of funds at the time goods and services are ordered	Entries are not made for obligations
Entries are made to expend appropriations when goods and services chargeable tot he appropriation are received, regardless of when they are used or paid for	Goods and services that will last more than a year and otherwise meet the criteria to qualify as assets are capitalized and expensed when consumed, regardless of what appropriation funded them and when they are paid for
Entries are only made against an appropriation for transactions funded by the appropriation	Goods and serviced consumed in the current period for which payment is to be made from one or more subsequent appropriations is recognized as an expense in the current period
Entries are not made against an appropriation for transactions not funded by the appropriation	Goods and services consumed in the current period but paid for in prior periods are expensed in the current period

Table 4-8: Comparison of Budgetary and Proprietary Accounting [Ref. 63:pp. 2-3]

The budgetary accounts are comparable to both the budgetary accounts and the encumbrance accounts established by municipalities. Entries are made to record appropriations, allotments, collections, and obligations. The FASAB does not recommend principles or standards for the budget accounts, but they do recommend

accounting principles that will help provide relevant and reliable financial information to support the budgetary process.

The proprietary accounts are similar to conventional revenue, expense, asset, liability, and equity accounts found in private sector accounting. The accounts that are unique to the federal government are mainly in the equity section (referred to as "net position") of the balance sheet. The next section provides a brief summary of the major classifications of accounting entries used in federal proprietary accounting.

2. Elements of Accounting

a. Assets

SFFAS No. 1 specifies four classifications of assets. These four classifications are Entity Assets, Nonentity Assets, Intragovernmental Assets, and Governmental Assets. Entity Assets are those the reporting entity has authority to use in its operations. Nonentity Assets are assets that are held by the entity, but are not available for the entity to spend. An example of a Nonentity Asset is federal income taxes collected by the Internal Revenue Service (IRS) for the U. S. Government. Intragovernmental Assets are claims by a reporting entity that arise from transactions between that entity and other reporting entities. Governmental Assets arise from transactions of the federal government or an entity of the federal government with nonfederal entities. [Ref. 64:par. 18-26]

(1) Cash. Most federal agencies use Fund Balance with Treasury rather than Cash to indicate that the agency has a claim against the U. S. Treasury on which it may draw to pay liabilities. A few large federal agencies, such as the Department of Defense, are authorized to issue checks directly against their balances with the Treasury. The other departments and agencies must request that the Treasury issue checks to pay their liabilities. Federal agencies that are authorized to maintain one or more bank accounts would report their bank balances as Cash. SFFAS No. 1 provides the specific standards related to Cash, Fund Balance with Treasury, Accounts Receivable, Interest Receivable, and various other asset categories. [Ref. 64:par. 27-30]

(2) Inventory and Related Property. SFFAS No. 3 distinguishes inventory from consumable supplies. Inventory is defined as tangible property that is held for sale, in the process of production for sale, or to be consumed in the production of goods for sale or in the provision of services for a fee [Ref. 57:par. 18]. Inventory may be valued at historical cost or the latest acquisition cost [Ref. 57:par. 20]. Supplies to be consumed during normal operations are reported as operating materials and supplies [Ref. 65:par. 36].

(3) Property, Plant, and Equipment (PP&E). SFFAS No. 6, "Accounting for Property, Plant, and Equipment" establishes standards for four categories of PP&E. These categories are:

- General PP&E – PP&E used to provide general government goods and services.
- Federal Mission PP&E – PP&E such as military weapons and space exploration equipment.
- Heritage assets – PP&E that possess educational, cultural, or natural characteristics (i.e., Monuments).
- Stewardship land – Land other than that included in general PP&E (i.e., National Parks). [Ref. 66:par. 21]

Federal mission PP&E, Heritage PP&E, and Stewardship land are collectively referred to as stewardship PP&E. These assets, acquisition, replacement, construction, reconstruction, and improvements are reported as costs, and expensed in the period incurred. These assets are not reported on the Balance Sheet and are not depreciated. General PP&E however, are capitalized and, except for land, are depreciated over their useful lives. [Ref. 66:par. 23-76]

b. Liabilities

SFFAS No. 1 also provides specific standards for Accounts Payable, Interest Payable, and Other Current Liabilities. Separate Balance Sheet reporting is required for liabilities covered by budgetary resources (referred to as funded) and liabilities not covered by budgetary resources (referred to as unfunded). Liabilities

covered by budgetary resources consist of the liabilities for which monies have been made available through Congressional appropriations or current earnings of the entity. Liabilities not covered by budgetary resources result from the receipt of goods or services in the current or prior periods, but for which no monies have yet been made available. Examples of liabilities not covered by budgetary resources are accrued leave, capital leases, and pensions. [Ref. 64:par. 74-86]

SFFAS No. 5, "Accounting for Liabilities of the Federal Government" defines a liability as a probable future outflow or other sacrifice of resources as a result of past transactions or events [Ref. 67:par. 19]. The recognition criteria for liabilities are provided by SFFAS No. 5 in Table 4-9.

Transaction	Recognition Criteria
Exchange Transactions	Recognize a liability when one party receives goods or services in exchange for a promise to provide money or other resources in the future.
Nonexhange Transaction	Recognize any unpaid amounts due as the end of the fiscal period
Governmental-related Events	Recognize when the event occurs if the future outflow of resources is probable and measurable
Governmental-acknowledged events (Natural Disaster)	Recognize when the government formally acknowledges responsibility for an event and a nonexchange or exchange transaction has occurred
Contingencies	Generally disclosed in the notes
Capital Leases	Liability should be recognized in the amount of the present value of the rental and other minimum lease payments
Federal Debt (Treasury Bonds)	Recognize liability when an exchange transaction has occurred between involved parties. Original issue premiums and discounts are amortized using the effective interest method
Pensions (retirement benefits employee benefits)	Recognize an expense at the time employees' services are rendered.
Insurance and guarantee programs (other than social insurance and loan guarantees)	Recognize a liability for unpaid claims incurred as a result of insured events that have already occurred.

Table 4-9: Recognition Criteria for Liabilities [Ref. 67:par. 20-34]

E. FORM AND CONTENT OF THE FINANCIAL STATEMENTS OF THE U.S. GOVERNMENT

The authoritative document concerning the required form and content of the financial statements of the agencies of the U.S. Government is OMB Bulletin No. 97-01. OMB Bulletin No. 97-01, "Form and Content of Agency Financial Statements", defines the form and content for financial statements of the Executive Branch of the United States Government, as required by Chief Financial Officer's Act of 1990. OMB Bulletin 97-01 does not address requirements for the consolidated financial statements of the U.S. Government as a whole.

The basis of OMB Bulleting No. 97-01 are the concepts and standards contained in the Statements of Federal Financial Accounting Concepts (SFFACs) and Statements of Federal Financial Accounting Standards (SFFASs) recommended by the Federal Accounting Standards Advisory Board (FASAB). OMB Bulletin No 97-01 was issued on October 16, 1996 and was effective in their entirety for the preparation of financial statements for the fiscal year ending September 30, 1998.

OMB Bulletin 97-01 stipulates that the financial statements of the agencies of the U.S. Government be composed of:

1) Overview of the reporting entity (Management's Discussion and Analysis);
2) Principal statements and related notes;
3) Required supplemental stewardship information; and,
4) Required supplemental information. [Ref. 68:pgs 4-5]

In addition, the annual financial statements should include other accompanying information that, in the judgement of management, provides users of the financial statements with relevant information useful for obtaining a better understanding of the entity's programs and the extent to which they are achieving their intended objective. [Ref. 68:p. 5]

The principal statements required in number 2 above include:

1) Balance Sheet;
2) Statement of Net Cost;

3) Statement of Changes in Net Position;

4) Statement of Budgetary Resources;

5) Statement of Financing; and,

6) Statement of Custodial Activity.

1. Balance Sheet

The balance sheet presents, as of a specific time, amounts of future economic benefits owned or managed by the reporting entity exclusive of items subject to stewardship reporting (assets), amounts owed by the entity (liabilities), and amounts which comprise the difference (net position). [Ref. 68:p. 16] The balance sheet equation relating to federal financial statements is:

$$\text{Assets} = \text{Liabilities} + \text{Net Position}$$

The balance sheet presents assets available for use by the reporting entity (entity assets) separately from those managed by the reporting entity but not available for use in its operations (non-entity assets). The balance sheet also separately presents liabilities covered by budgetary resources and liabilities not covered by budgetary resources.

Figure 4-2 illustrates a consolidated, single-column balance sheet. Reporting entities preparing financial statements in accordance with OMB Bulletin No. 97-01 may present similar information or may present information in separate columns for their primary components.

2. Statement of Net Cost

The statement of net cost is designed to show separately the components of the net cost of the reporting entity's operations for the period. Net cost of operations is the gross cost incurred by the reporting entity less any exchange revenue earned from its activities. The gross cost of a program consists of the full cost of the outputs produced by that program plus any non-production costs that can be assigned to the program. The net cost of a program consists of gross cost less related exchange revenues. By disclosing the gross and net cost of the entity's programs, the statement of net cost provides information that can be related to the outputs and outcomes of the programs. [Ref. 68:p. 26]

ASSETS			
Entity			
Intragovernmental			
Fund Balance with Treasury	xxx		
Investments	xxx		
Accounts Receivable	xxx		
Total Intragovernmental		xxx	
Investments		xxx	
Accounts Receivable		xxx	
Loans Receivable		xxx	
Inventory and Related Property		xxx	
General Plant, Property, and Equip.		xxx	
Total Entity			xxx
Non-Entity			
Intragovernmental			
Fund Balance with Treasury	xxx		
Accounts Receivable	xxx		
Total Intragovernmental		xxx	
Accounts Receivable		xxx	
Taxes Receivable		xxx	
Cash and Other Monetary Assets		xxx	
Total Non-Entity		xxx	
Total Assets			xxx
LIABILITIES			
Liabilities Covered by Budgetary Resources:			
Intragovernmental:			
Accounts Payable	xxx		
Debt	xxx		
Total Intragovernmental		xxx	
Accounts Payable	xxx		
Loan Guarantees	xxx		
Debt, Public	xxx		
Federal Employee and Veterans Benefits	xxx		
Total Liabilities Covered by Budgetary Resources		xxx	
Liabilities Not Covered by Budgetary Resources:			
Intragovernmental:			
Accounts Payable	xxx		
Debt	xxx		
Total Intragovernmental		xxx	
Accounts Payable	xxx		
Loan Guarantees	xxx		
Debt, Public	xxx		
Federal Employee and Veterans Ben.	Xxx		
Total Liabilities Not Covered by Budgetary Resources		xxx	
Total Liabilities			xxx
NET POSITION			
Unexpended Appropriations		xxx	
Cumulative Results of Operations		xxx	
Total Net Position			xxx
TOTAL LIABILITIES AND NET POSITION			xxx

Figure 4-2: Balance Sheet Report Format [Ref. 68:p. 14-15]

The statement of net cost and related supporting information should show the net cost of operations for the reporting entity as a whole and its sub-organizations and programs. In the statement of net cost, exchange revenues are deducted from gross operating costs to show the net cost of the entity's operating activities. This is the amount for which the entity is responsible and that must ultimately be paid by the taxpayer through taxes and other demand type revenues or financed by government borrowing. All operating costs and applicable exchange revenues should be shown in the statement of net cost. The accounting model for the statement of net cost then is:

Gross Operating Cost – Exchange Revenue = Net Cost of Operating Activities

Figure 4-3 presents a standard statement of net cost. Figure 6-2 is an example of how information can be displayed for an entity with a complex organizational or program structure.

COSTS	Sub-Organization A	Sub-Organization B	Total
Crosscutting Programs			
Program A			
Intragovernmental	xxx	xxx	xxx
With the Public	xxx	xxx	xxx
Net Program Costs	xxx	xxx	xxx
Other Programs			
Program B	xxx	xxx	xxx
Program C	xxx	xxx	xxx
Program D	xxx	xxx	xxx
Program E	xxx	xxx	xxx
Other Programs	xxx	xxx	xxx
Total Other Program Costs	xxx	xxx	xxx
Costs Not Assigned to Programs	xxx	xxx	xxx
Total Costs	xxx	xxx	xxx
REVENUES			
Intragovernmental	xxx	xxx	xxx
Revenues Not Attributable to Programs	xxx	xxx	xxx
Interest Revenue	xxx	xxx	xxx
Total Revenues	xxx	xxx	xxx
NET COST OF OPERATIONS	xxx	xxx	xxx

Figure 4-3: Statement of Net Cost Report Format [Ref. 68:p. 25]

3. Statement of Changes in Net Position

The statement of net position reports the beginning net position, the items which caused the net position to change over the reporting period, and the ending net position. The accounting model for the statement of net position is:

Beginning Net Position – Changes in Net Position = Ending Net Position

The organization is responsible for displaying information on the statement of changes in net position by responsibility segment, component, or in the same manner as organized in the statement of net cost. [Ref. 68:p. 31] Figure 4-4 contains a sample of the reporting format for the statement of changes in net position.

	Sub-Organization A	Sub-Organization B	Total
Net Cost of Operations	xxx	xxx	xxx
Financing Sources			
Appropriations Used	xxx	xxx	xxx
Taxes	xxx	xxx	xxx
Donations	xxx	xxx	xxx
Imputed Financing	xxx	xxx	xxx
Transfers-In	xxx	xxx	xxx
Transfers-Out	xxx	xxx	xxx
Net Results of Operations	xxx	xxx	xxx
Prior Period Adjustments	xxx	xxx	xxx
Net Changes in Cumulative Results of Operations	xxx	xxx	xxx
Increase (Decrease) in Unexpended Appropriations	xxx	xxx	xxx
Change in Net Position	xxx	xxx	xxx
Net Position – Beginning of Period			xxx
Net Position – End of Period			xxx

Figure 4-4: Statement of Changes in Net Position Report Format [Ref. 68:p. 30]

4. Statement of Budgetary Resources

The statement of budgetary resources provides information about how budgetary resources were made available as well as their status at the end of the period. This report is prepared by organizations that receive any amount of budgetary resources. Since monitoring of budget execution is at the individual account level, budgetary information provided in the statement of budgetary resources should be disaggregated for each of the

reporting entity's major budget accounts and presented in supplementary information. [Ref. 68:p. 34]

There is no standard accounting model for the statement of budgetary resources as it is only provides a status of budgeted funds. In other words, budgetary resources = status of budgetary resources. Figure 4-5 provides a sample of the reporting format for the statement of budgetary resources.

	Major Budget Acct	Major Budget Acct	Total
Budgetary Resources:			
Budget Authority	xxx	xxx	xxx
Un-Obligated Balances	xxx	xxx	xxx
Net Transfers	xxx	xxx	xxx
Spending Authority from Offsetting Collections	xxx	xxx	xxx
Adjustments	xxx	xxx	xxx
Total Budgetary Resources	xxx	xxx	xxx
Status of Budgetary Resources:			
Obligations Incurred	xxx	xxx	xxx
Un-Obligated Balances (Available)	xxx	xxx	xxx
Un-Obligated Balances (Not Available)	xxx	xxx	xxx
Total Status of Budgetary Resources	xxx	xxx	xxx
Outlays:			
Obligations Incurred	xxx	xxx	xxx
Less: Spending Authority from Offsetting Adj.	xxx	xxx	xxx
Subtotal (Obligations Incurred, Net)	xxx	xxx	xxx
Obligated Balance – Beginning of Period	xxx	xxx	xxx
Obligated Balance Transferred	xxx	xxx	xxx
Less: Obligated Balance – End of Period	xxx	xxx	xxx
Total Outlays	xxx	xxx	xxx

Figure 4-5: Statement of Budgetary Resources Report Format [Ref. 68:p. 33]

5. Statement of Financing

The statement of financing provides a reconciliation of the accrual-based accounting used in the statement of net cost with the budgetary accounting used in the statement of budgetary resources. This reconciliation insures that there is a proper relationship between proprietary and budgetary accounts in the reporting entity's financial management system. [Ref. 68:p. 36]

The accounting model for the statement of financing is:

Net Obligations & Non-Budgetary Resources

+ Change in items ordered but not received

+ Other Resources

+ Costs that do not require resources

+ Financing Sources not yet Provided

= Net Cost of Operations

Figure 4-6 provides an example of the reporting format for the statement of financing. Total budgetary and non-budgetary resources available to fund current-period operations are reported in the upper section captioned Obligations and Non-Budgetary Resources. The Resources That Do Not Fund Net Cost of Operations section essentially deducts items that were included in sources or uses of budgetary resources, but were not included as part of the net cost of operations on the accrual basis. The third section, Costs That Do Not Require Resources, are items that would have been included in the measurement of the net cost of operations but that did not require financing. The final section, Financing Sources Yet to Be Provided, would typically be required for an increase in unfunded liabilities, such as unfunded annual leave.

6. Statement of Custodial Activity

The statement of custodial activity is required for entities that collect non-exchange revenue for the General Fund of the U.S. Treasury, a trust fund, or other recipient entities. This statement is then usually required of agencies such as the Internal Revenue Service and the U.S. Customs Service. The collecting entities do not recognize collections that have been or should be transferred to others as revenues. Rather, the entities account for resources and disposition of the collections as custodial activities on the statement of Custodial Activity. [Ref. 68:p. 39]

The accounting model for the statement of custodial activity is:

Custodial Collections – Custodial Dispositions = Net Custodial Activity

Figure 4-7 provides the standard reporting format for the statement of custodial activity.

Obligations and Non-Budgetary Resources		
Obligations Incurred	xxx	
Less: Spending Authority for Offsetting Adj.	xxx	
Donations not in Budget	xxx	
Financing Imputed for Cost Subsides	xxx	
Transfers-Out	xxx	
Exchange Revenue not in Budget	xxx	
Total Obligations and Non-Budgetary Resources		xxx
Resources That Do Not Fund Net Cost of Operations		
Change in amounts of G&S Ordered but not Received	xxx	
Costs Capitalized on Balance Sheet	xxx	
Financing Sources that Fund Costs of Prior Periods	xxx	
Total Resources That Do Not Fund Net Cost of Operations		xxx
Costs That Do Not Require Resources		
Depreciation and Amortization	xxx	
Revaluation of Assets and Liabilities	xxx	
Total Costs That Do Not Require Resources		xxx
Financing Sources Yet to be Provided		xxx
Net Cost of Operations		**xxx**

Figure 4-6: Statement of Financing Report Format [Ref. 68:p. 35]

	20xx	20xx
Revenue Activity:		
Sources of Cash Collections:		
Individual Income and FICA/SECA Taxes	xxx	xxx
Corporate Income Taxes	xxx	xxx
Excise Taxes	xxx	xxx
Estate and Gift Taxes	xxx	xxx
Federal Unemployment Taxes	xxx	xxx
Customs Duties	xxx	xxx
Miscellaneous	xxx	xxx
Total Cash Collections	xxx	xxx
Accrual Adjustments	xxx	xxx
Total Custodial Revenue	xxx	xxx
Disposition of Collections:		
Transferred to Others		
Recipient A	xxx	xxx
Recipient B	xxx	xxx
Recipient C	xxx	xxx
Change in Amounts Yet to be Transferred	xxx	xxx
Refunds and Other Payments	xxx	xxx
Retained by the Reporting Entity	xxx	xxx
Net Custodial Revenue Activity	0	0

Figure 4-7: Statement of Custodial Activity Report Format [Ref. 68:p. 38]

This chapter has attempted to provide a broad overview of federal financial accounting and reporting environment. This included a look at the standard setting bodies and legislation, accounting principles and concepts, financial reporting users and objectives, and the form and content of federal agency financial reports.

Chapter V will introduce a framework for financial ratio analysis of audited federal financial reports. This framework will draw upon the frameworks introduced for the private for-profit sector, private not-for-profit sector, and state and local government sector. The framework will equally be based upon the unique financial accounting and reporting environment introduced in Chapter IV.

V. FRAMEWORK FOR FINANCIAL RATIO ANALYSIS OF AUDITED FEDERAL FINANCIAL REPORTS

A. DEVELOPMENT OF THE FINANCIAL RATIO FRAMEWORK

1. Introduction

As presented in Chapter IV, standardized financial statements for agencies of the federal government are a relatively recent development. Study and analysis of these financial statements is now in its infant stage. This thesis is an attempt to develop a framework of ratios for use in analyzing federal agency financial statements. This framework will be presented in this chapter.

The framework developed draws upon the existing frameworks developed in the private for-profit sector, private not-for-profit sector, and the state and local government sector. These frameworks were presented in Chapter III. The common basis of these frameworks has been the users, uses, and objectives of financial accounting and reporting.

The framework developed will also draw upon the financial accounting and reporting environment unique to the federal government. No framework identified for another sector of the economy could be directly used because of the unique federal financial accounting and reporting environment. Two financial characteristics are important in developing a framework for financial ratio analysis of audited federal financial reports which differentiate it from private for-profit enterprises, private not-for-profit enterprises, and state and local governments enterprises. First, federal agencies use appropriated funds for specific programs based upon the Planning, Programming, Budgeting System (PPBS). Federal funds are appropriated to these individual agencies based on their missions and financial needs of these programs. Because of this, it is important that the financial data of both individual programs and the agencies as a whole be analyzed. Secondly, most federal agencies cost money rather than make it in conducting their operations. Therefore, it is important to view the agencies as cost centers and to highlight the importance of cost to the agencies.

Because of the diversity of operating characteristics of federal agencies, there is no "catch-all" framework that could be used or applied to all agencies categorically. Rather, the analysis of a federal agency using a framework for ratio analysis will have to be somewhat tailored to that agency with the specific goals and operating characteristics of that agency in mind. The framework presented in this thesis attempts to be broad enough to cover the major spectrums of federal financial operating characteristics of all reporting agencies within the federal government.

2. Objective, Focus, and Purpose of the Financial Ratio Framework

With any financial analysis framework, it is first necessary to define the objective, focus, and purpose of the framework. A proper objective, focus, and purpose will ensure that the framework provides information that is useful to the needs of the users and meets the objectives of those users. A proper objective, focus, and purpose will additionally ensure that extraneous information is not included which could obscure the relevant facts of the analysis.

The objective of ratio analysis is considered to be the facilitation of financial statement interpretation. This is basically achieved by reducing the large number of financial statement items into a relatively small set of ratios. Such ratios relate the absolute values of financial statement items to common bases; thus allowing a meaningful comparison of financial data both over time and across reporting entities for a given period.

The objective of this framework for financial ratio analysis is to provide those users of federal financial reports relevant information that will assist in making better informed resource allocation decisions. Recent legislation, outlined in Chapter IV, has as its goal the improvement of federal financial operations by requiring the production of auditable federal financial reports. This framework will assist in achieving this goal through the use of financial ratios to evaluate the operations, performance, and financial status of federal agencies based upon information contained in their financial reports.

The focus of this ratio framework is on the users and objectives of federal financial reporting. The users and objectives of federal financial reporting were promulgated by the FASAB in SFAC No. 1 and discussed in Chapter IV. In summary, the users and objectives of federal financial reporting are outlined in Tables 5-1 and 5-2.

Citizens
Congress
Executives
Program Managers

Table 5-1: Users of Federal Financial Reporting

Budgetary Integrity
Operational Effectiveness
Stewardship
Systems and Control

Table 5-2: Objectives of Federal Financial Reporting

The framework for financial ratio analysis developed in this thesis will be useful to the users of federal financial reports, particularly those who use the information for planning, budgeting, and program/agency evaluation purposes. This framework will assist them in analyzing program and agency financial attributes in quantitative terms. Some attributes, such as operating costs, can be measured directly in dollar amounts. Other attributes, such as operating efficiency or return on appropriated funds, are not directly measurable in dollar amounts but can be measured usefully with financial ratios.

The financial ratios developed by this framework are not necessarily intended to provide definite answers. Their real value is derived from the questions they provoke and the further analysis that results from their use. Financial ratios provide information on the symptoms of the reporting entities economic condition and guide the user or analyst in the interpretation of the financial statements.

The financial ratio framework developed in this thesis can be utilized to expedite the operational, performance, or financial analysis of the federal program or agency by reducing the large number of items found in the federal financial reports into a relatively small set of easily comprehended and economically meaningful indicators. These ratios can also be further used to conduct trend analysis, cross section analysis, and

benchmarking to assess the operations, performance, or financial status of the federal program or agency.

3. Methodology in Developing Financial Ratios

The research methodology for this thesis has been divided into two phases: archival and analytical. The archival research phase, comprising Chapters II, III, and IV, consisted of researching the background information on ratios, ratio analysis frameworks, and the federal financial reporting environment. This information was essential in establishing a base of knowledge on which the financial ratio framework of audited federal financial reports would be developed.

The analytical research phase of this thesis, presented in this chapter, relies on the pragmatic empiricism approach in developing financial ratios. With respect to the formation of financial ratios, past research generally argues for some logical relationship between the numerator and denominator. However, defining a "logical relationship" has proved to be both abstract and obscure [Ref. 7:p. 34]. The pragmatic empiricism approach to developing financial ratios for this thesis will be objectives-based. The objectives-based approach flows directly from the Objectives of Federal Financial Reporting (SFFAC No. 1) promulgated by the FASAB and is the most logical starting point for a financial ratio analysis framework of audited federal financial reports (where no prior frameworks have existed).

Other approaches could have been used which utilized the pragmatic empiricism approach, deductive approach, inductive approach, and/or confirmatory approach – individually or in combination. Two other approaches include a data-based approach whereby all ratio combinations would be calculated and then classified based upon factor analysis, or an alternative ratio framework approach whereby ratio analysis frameworks from other sectors are applied directly to federal financial reports.

As an innumerable number of ratios could be developed from the principal federal financial statements, a criteria selection process will be utilized to select only those ratios that provide the most relevant information to the users of this ratio framework. Identification of the pragmatic empiricism and objectives-based approaches are the first

two steps in this ratio selection process. The selection process continues through the following steps:

1) Identification of relevant factors important in assessing the objective of federal financial reporting under consideration. These factors are contained in SFFAC No. 1, issued by the FASAB.
2) Identification of the financial reports and financial report line items that provide information on the specific objective of federal financial reporting under consideration.
3) Relation of financial report line items with each other from financial reports identified in No. 2 above. Those that provide minimum information content without redundancy are accepted. Those with no logical value and/or redundant ratios are rejected.
4) Identification of those ratios that provide the most relevant information on the objective of federal financial reporting under consideration are classified under that specific objective grouping.

The next section of this chapter is organized by the objectives of federal financial reporting. Each objective will be discussed and the relevant factors that underscore each objective will be determined. From this determination, ratios will be developed which may provide information as to the performance of the federal entity on the achievement or non-achievement of that objective. Additionally, ratio calculations will be computed for the Department of Energy (DOE) and the National Aeronautics and Space Administration (NASA) based upon their 1998 audited financial reports.[16] Detailed copies of these reports and the calculations can be found in Appendix A through D.

[16] Use of DOE/NASA financial data is in no way an assessment of their operational or financial performance. Their use is for illustrative purposes only.

B. FINANCIAL RATIOS FROM FEDERAL FINANCIAL REPORTS

1. Budgetary Integrity

The goal of the Budgetary Integrity objective is public accountability for monies raised and expensed through government operations. Federal financial statements should produce information that will assist the users in determining how budgetary resources were obtained and used by the reporting entity. As stated by the SFFAC No. 1, "...how budgetary resources have been obtained and used and whether their acquisition and use were in accordance with legal authorization...". (Ref. 43:par. 13)

The focus of this objective is retrospective in nature. The focus is on evaluating data on budget execution against appropriations made by congress. (Ref 43:par. 114) Thus, the principal financial statement used in evaluating Budgetary Integrity will be the Statement of Budgetary Resources. Combining information on the Statement of Budgetary Resources with information from other federal financial statements will also provide information relevant to assessing Budgetary Integrity.

Table 5-3 provides a listing and description of ratios that could be produced from the principal financial statements that may assist in providing information on assessing Budgetary Integrity.

Proposed Ratio	Proposed Ratio Calculation	Proposed Ratio Description	DOE	NASA
Budget Authority to Budgetary Resources	Budget Authority / Total Budgetary Resources	Describes the relationship between Budget Authority and Total Budgetary Resources. Indicates the percentage of Total Budgetary Resources that is made up of Budget Authority.	71%	88.9%
Other Sources of Funds to Budgetary Resources	(Total Budgetary Resources – Budget Authority) / Total Budgetary Resources	Describes the percentage of Total Budgetary Resources that is made up of Other Sources of Funding. Other Sources of Funding can include such things as unobligated balances from prior fiscal years and spending authority from offsetting collections.	29%	11.1%
Budget Authority to Outlays	Budget Authority / Total Outlays	Describes the relationship between Budget Authority (or funds appropriated for the fiscal year) and Total Outlays.	100.4%	96.1%
Outlays to Obligations	Total Outlays / Obligations Incurred	Describes the relationship between Total Outlays and Obligations Incurred. Indicates the degree to which funds have been outlayed as a percentage of Obligations Incurred.	77.4%	98.6%
Obligations to Budget Authority	Obligations Incurred, Net / Budget Authority	Describes the relationship between Obligations Incurred, Net and Budget Authority. Provides an indication about whether or not the entity obligated more than they were appropriated for the fiscal year and whether or not they had to rely on other sources of funding.	100.5%	100.9%
Compliance/Antideficiency Ratio	Obligations Incurred / Total Budgetary Resources	Describes the relationship between Obligations Incurred, Net and Total Budgetary Resources. Indicates the degree to which Budgetary Resources have been obligated by the reporting entity.	91%	93.9%
Return on Budget Authority	Total Outlays / (Budget Authority + (Unobl. Bal. (beg.) – Unobl. Bal. (end)))	Describes the relationship between Total Outlays and the total Budget Authority used by the entity during the fiscal year. Indicates the return the entity received on Budget Authority in terms of Total Outlays.	98.9%	103.1%
Return on Total Resources	Total Outlays / Total Budgetary Resources	Describes the relationship between Total Outlays and Total Budgetary Resources. Indicates the return the entity received on Total Budgetary Resources in terms of Total Outlays.	71.4%	92.6%
Utilization Ratio	(Budget Authority + (Unobl. Bal. (beg.) – Unobl. Bal. (end))) / Total Budgetary Resources	Describes the relationship between the Total Budget Authority used during the fiscal year and the Total Budgetary Resources. Indicates how much total Budget Authority was used as a percentage of Total Budgetary Resources.	72.2%	N/A
Reliance on Other Sources of Funding Ratio	(Obligations Incurred – Budget Authority) / Budget Authority	Describes the relationship between Obligations Incurred and Budget Authority to determine the extent to which Other Sources of Funding were required.	28.2%	5.5%
Percentage of Uncovered Liabilities	Total Liabilities Not Covered by Budgetary Resources / Total Liabilities	Describes the relationship between Total Liabilities Not Covered by Budgetary Resources and Total Liabilities. Provides an indication of the extent to which total liabilities are made up of Total Liabilities Not Covered by Budgetary Resources.	807%	11.2%

Table 5-3: Possible Ratios for Assessing Budgetary Integrity

2. Operating Performance

The goal of the Operating Performance objective is to assist users in evaluating the reporting entity's service efforts, costs, and accomplishments. This is a broad category which also includes how those costs were financed (relating to the Budgetary Integrity objective) and the management of the entity's assets and liabilities (relating to the Stewardship objective). (Ref. 43:par. 122).

Because the government's services are not usually exchanged for voluntary payments or fees, expenses cannot be matched against revenue to measure "earnings" or "net income". Therefore, some other basis must be used to determine the relative position of net cost. Additionally, directly measuring the value added to society's welfare by government actions is difficult. Nonetheless, expenses can be matched against a level of services from year to year. This may require the use of information that is not directly available in the financial statements. (Ref. 43:par. 124)

As the goal of the Operating Performance objective is so overarching, information from all principal financial statements can be used in developing ratios that serve to provide information on this objective. However, the principal statements that will be used are the Statement of Net Cost and the Statement of Changes in Net Positions as they provide the most information in the basis of Operating Performance.

Table 5-4 provides a listing and description of ratios that could be produced from the principal financial statements that may assist in providing information on assessing Operating Performance.

Proposed Ratio	Proposed Ratio Calculation	Proposed Ratio Description	DOE	NASA
Liabilities to Assets	Total Liabilities / Total Assets	Describes the relationship between Total Liabilities and Total Assets. Compares what is owed to the value of assets used by the entity.	235.1%	16.7%
Operating Efficiency Ratio	Net Cost of Operations / Service Base	Describes the relationship between the Net Cost of Operations and some reporting entity specific service base. Accurate calculation of the operating efficiency ratio will require additional information about the reporting entity that may be available in the annual report or from other sources.	N/A	N/A
Net Cost of Operations to Appropriations	Net Cost of Operations / Appropriations Used	Describes the relationship between the Appropriations Used and the Net Cost of Operations. Indicates to what extent the Net Cost of Operations exceeded the Appropriations Used.	124.3%	100.5%
Return on Fixed Assets	PP&E / Net Results of Operations	Describes the relationship between Property, Plant and Equipment (PP&E or Fixed Assets) and the Net Results of Operations. Provides and indication of a return on fixed assets for the reporting entity.	(38.4%)	.16%
Net Cost of Operations Growth	Net Cost of Operations (Current Year)- Net Cost of Operations (Prior Year) / Net Cost of Operations (Prior Year)	Describes the growth trend of the Net Cost of Operations from the prior fiscal year to the current fiscal year.	159.5%	N/A
Unassigned Program Costs to Program Expenses	Total Costs Not Assigned to Programs / Total Program Expense	Describes the relationship between the Total Costs Not Assigned to Programs with the Total Program Expense. Provides an indication of cost management of the reporting entity.	83.3%	11.7%
Unassigned Costs to Net Cost of Operations	Total Costs Not Assigned to Programs / Net Cost of Operations	Describes the relationship between the Total Costs Not Assigned to Programs and the Net Cost of Operations. Indicates what percentage of Net Cost of Operations is not directly accounted for in an entity program.	63.8%	12.36%
Return on Net Cost	Net Results of Operations / Net Cost of Operations	Describes the relationship between the Net Results of Operations and the Net Cost of Operations. Indicates the return received on the Net Cost of Operations in terms of the Net Results of Operations.	(36.4%)	.25%
Return on Appropriated Funds	Net Results of Operations / Appropriations Used	Describes the relationship between the Net Results of Operations and the Appropriations Used. Provides an indication of the return on the Appropriations used by the entity in terms of the Net Results of Operations.	(45.2%)	.25%

Table 5-4: Possible Ratios for Assessing Operating Performance

3. Stewardship

The goal of the Stewardship objective is an assessment of the reporting entity's ability to manage those assets which have been entrusted to it and how the financial condition of the government and nation has changed as a result of that management.

This objective is based upon the government's responsibility for the general welfare of the nation as a going concern. This includes information as to whether or not the reporting entity's financial position has improved or deteriorated, whether future budgetary resources will be sufficient to meet future expenses, and whether the entity's operations have contributed to the nation's current and future well-being.

The principal financial statement utilized in developing ratios for assessing the Stewardship objective will be the Balance Sheet. The Balance Sheet provides primary information on the assets, liabilities, and net position of the reporting entity. Other financial statements will be used to further assess the reporting entity's performance in meeting the stewardship objective.

Table 5-5 provides a listing and description of ratios that could be produced from the principal financial statements that may assist in providing information on assessing Stewardship.

Proposed Ratio	Proposed Ratio Calculation	Proposed Ratio Description	DOE	NASA
Fixed Assets to Total Assets	PP&E / Total Assets	Describes the relationship between PP&E (fixed assets) and Total Assets. Indicates the percentage of Total Assets that is mad up of PP&E. Provides and indication of the capital intensity of the entity.	20.3%	71%
Fixed Assets to Equity	PP&E / Net Position	Describes the relationship between PP&E (fixed assets) and the Net Position (equity). Provides an indication of the extent the entity's equity is tied up on fixed assets.	(15%)	85.2%
Depreciation Rate	Depreciation / PP&E	Describes the relationship between Depreciation and PP&E. Provides the rate of depreciation for the entity's fixed assets and an relative indication of the aggressiveness of that rate.	9.5%	9.4%
Inventory to Assets	Inventory & Related Property / Total Assets	Describes the relationship between Inventory & Related Property and Total Assets. Provides an indication of the percentage of Total Assets tied up on Operating Materials & Supplies.	38.1%	7.6%
Depreciation to Total Cost	Depreciation Expense / Total Cost of Operations	Describes the relationship between Depreciation Expense and the Total Cost of Operations. Indicates the percentage of Total Cost of Operations that is made up of Depreciation Expense and provides and indication of the relative aggressiveness of the entity's depreciation policy.	6.4%	13.5%
Capital Investment Ratio	Change in PP&E / Total Assets	Describes the relationship between the change in PP&E and the Total Assets of the entity. Provides a measure of the investment in capital assets of the entity.	(1%)	(20.7%)
Total Assets Maintenance	Total Assets / Appropriations Used	Describes the relationship between Total Assets and Appropriations Used. Provides an indication of the level of appropriations needed to maintain the level of assets used by the entity.	5.809	2.139
Fixed Assets Maintenance	PP&E / Appropriations Used	Describes the relationship between PP&E (fixed assets) and the Appropriations Used. Provides and indication of the level of appropriations needed to maintain the level of fixed assets used by the entity.	1.177	1.52
Receivables Management	Total Receivables, Net / Total Assets	Describes the relationship between Total Receivables (intragovernmental and governmental) and Total Assets. Indicates the percentage of Total Assets made up of entity Receivables.	4.7%	.5%

Table 5-5: Possible Ratios for Assessing Stewardship

4. Systems and Control

The primary goal of the Systems and Control objective is one of internal controls. The Systems and Control objective is to assist users in understanding whether the underlying financial management systems and internal accounting and control mechanisms are sufficient to ensure Budgetary Integrity, Operating Performance, and Stewardship objectives can be achieved.

Financial reporting accomplishes two purposes. The first is to provide information. The first three objectives of federal financial reporting, Budgetary Integrity, Operating Performance, and Stewardship, are information-based objectives whose attributes can be assessed via ratio analysis of federal financial reports. The final objective, Systems and Control, is a process-based objective to ensure the quality of the information contained in the federal financial reports. As such, the objective of Systems Control cannot be assessed via ratio analysis.

The ability to prepare federal financial reports that report all transactions, classified in appropriate ways, that faithfully represent the underlying events is itself an indication that certain essential controls are in place and operating effectively. Combined with an auditors' opinion, the preparation of reliable financial reports helps to ensure that reporting entities have early warning of potential problems and take actions to correct those problems. (Ref. 43:par 148)

C. FRAMEWORK FOR FINANCIAL RATIO ANALYSIS OF AUDITED FEDERAL FINANCIAL REPORTS

From Chapter II we can conclude that financial statement analysis and financial ratio analysis have long traditions. Throughout the past century, practitioners and researchers have come up with a vast number of financial ratios for all sectors of the economy to be used in the evaluation of the operations, performance, and financial status of reporting entities. Much research has been done to reduce the obvious redundancy between the financial ratios by classifying them and selecting one or two representative financial ratios from each group. This reduction in potential financial ratios eases the

information gathering and overload burden without any marked loss of information content in the financial statement analysis results.

The process of classifying the financial ratios and selecting a framework can be divided into four main approaches.[17] The pragmatic approach is largely based on common business practice and the personal views of the author. The deductive approach draws from the theoretical considerations and empirical properties of the financial ratios. The inductive approach is primarily based on observed statistical behavior of financial ratios. Finally, the confirmatory approach uses a combination of the deductive approach and the inductive approach in developing a classification for financial ratios. The framework for financial ratio analysis of audited federal financial reports developed by this thesis best belongs to the first approach.

A two-step process based upon pragmatic empiricism is used to determine which ratios from the listings of ratios found in Section B of this chapter to utilize in one complete ratio framework. This two-step process is intended to identify the top two tiers (similar to a pyramid scheme) of financial ratios that provide information about the objective under consideration. This two-step process is summarized as follows:

1) Identification of the one ratio (the lead ratio) from each objective category that best provides information as to the achievement or non-achievement of that objective. This ratio is intended to be broad in scope and embody all aspects of the objective under consideration.
2) Identification of the minimal set of ratios under the lead ratio that best provides information about that lead ratio. This second set of ratios should immediately be able to identify the factors effecting changes in the lead ratio.

Taken as a whole, the ratios selected through this process provide the most relevant information to the users and encompass the broad spectrum of the financial reporting objective that they are reporting on.

[17] Refer to Chapter II for a more detailed discussion of these approaches.

The framework for financial ratio analysis of audited federal financial reports developed by this thesis is presented in Table 5-6. Following Table 5-6 is a detailed description of each of the ratios.

Ratio	Ratio Calculation	Federal Reporting Objective
Compliance/Antideficiency Ratio	Obligations Incurred / Total Budgetary Resources	Budgetary Integrity
Percentage of Uncovered Liabilities Ratio	Total Liabilities Not Covered By Budgetary Resources / Total Liabilities	Budgetary Integrity
Return on Total Resources	Total Outlays / Total Budgetary Resources	Budgetary Integrity
Reliance on Other Sources of Funding Ratio	Obligations Incurred – Budget Authority / Budget Authority	Budgetary Integrity
Operating Efficiency Ratio	Net Cost of Operations / Service Base	Operating Performance
Return on Net Cost	Net Results of Operations / Net Cost of Operations	Operating Performance
Return on Appropriated Funds	Net Results of Operations / Appropriations Used	Operating Performance
Unassigned Program Cost to Total Cost of Operations	Total Costs Not Assigned to Programs / Total Cost of Operations	Operating Performance
Total Asset Maintenance	Total Assets / Appropriations Used	Stewardship
Fixed Assets to Total Assets	PP&E / Total Assets	Stewardship
Inventory to Assets	Operating Materials & Supplies / Total Assets	Stewardship
Depreciation to Total Cost	Depreciation Expense / Total Cost Operations	Stewardship
Capital Investment Ratio	Change in PP&E / Total Assets	Stewardship

Table 5-6: Framework for Financial Ratio Analysis of Audited Federal Financial Reports

1. Budgetary Integrity

- *Compliance/Antideficiency Ratio:* The Compliance/Antideficiency Ratio is intended to measure the extent to which the reporting entity obligated their funds as a percentage of Total Budgetary Resources. The Compliance/Antideficiency Ratio is the lead ratio under the Budgetary

Integrity objective. Under normal operating circumstances, this ratio should always be below 100%. If not, it may indicate the reporting entity violated Title 10 U.S.C. 1517 in over-obligating their funds in excess of budgetary resources available. Likewise, a low value for this ratio may indicate low obligation rates for the reporting entity. Low obligation rates may be characteristic of entities that use multi-year appropriations or that have large procurement accounts.

- *Percentage of Uncovered Liabilities Ratio:* The Percentage of Uncovered Liabilities ratio is intended to measure the amount of Liabilities Not Covered by Budgetary Resources that the reporting entity maintains as a percentage of the Total Liabilities. While this measure could fall under the Operating Performance objective, it has been placed under the Budgetary Integrity objective as it provides an indication of possible future uses of funds. A high percentage ratio may indicate that the reporting entity will need substantially higher amounts of budget authority or find other sources of funds. A low percentage ratio may indicate that the level of funding the reporting entity is currently receiving will be adequate to maintain their current level of Liabilities not Covered by Budgetary Resources.
- *Return on Total Resources Ratio:* The Return on Total Resources Ratio is intended to be a measure of the return the reporting entity received on Total Budgetary Resources in terms of Total Outlays. The Total Outlays figure is used as it is presumably an accurate figure of the value of goods and services the reporting entity actually paid for during the reporting period. This ratio serves primarily as a measure of the use of funds under the Budgetary Integrity objective. A high ratio for the Return on Total Resources may indicate a faster or more efficient operating or acquisition cycle for the reporting entity.
- *Reliance on Other Sources of Funding Ratio:* The Reliance on Other Sources of Funding ratio is intended to be a measure of the extent to which the reporting entity had to rely on sources of funding other than appropriated

funds to maintain operations for the reporting period. This ratio serves as both a measure of the sources and uses of funds under the Budgetary Integrity objective. Ratios over 100% indicate that the reporting entity had to rely on some other source of funding (be it unobligated balances, net transfers, or spending authority from offsetting collections) in order fund all of its obligations for the reporting period.

2. Operating Efficiency

- *Operating Efficiency Ratio:* The Operating Efficiency Ratio is intended to measure the overall operating performance and efficiency of the reporting entity in terms of their Net Cost of Operations and some service base unique to the reporting entity. The service base unique to the reporting entity should be identifiable in the reporting entity's annual accountability report and in accordance with the Government Performance and Results Act of 1994. This ratio will be reporting entity specific as the service base will differ from reporting entity to reporting entity. As an example, the service base for NASA may be manned or unmanned space missions; for the DOE, energy resources. This is the lead ratio under the Operating Performance objective as it provides the most complete overall picture of the reporting entity for the reporting period.
- *Return on Net Cost Ratio:* The Return on Net Cost Ratio is intended to measure the return the reporting entity received on the net cost they spent on operations in terms of the net results they received from their operations. This ratio provides an indication of the reporting entity's service efforts and accomplishments and falls under the Operating Performance objective. A high ratio would indicate that the reporting entity received a high return on the net cost they spent on operations. This may indicate that the reporting entity operated efficiently and/or their management made sound investments. A low ratio would indicate the opposite or that some other factor influenced the ratio requiring further analysis.

- *Return on Appropriated Funds Ratio:* The Return on Appropriated Funds Ratio is intended to measure the return the reporting entity received on their Appropriations Used in terms of their Net Results of Operations. This measure serves as both a measure of service efforts and accomplishments and falls under the Operating Performance objective. A high ratio would indicate that the reporting entity received a high return on the funds appropriated by Congress and used by the reporting entity. This may indicate operational or management efficiency and effectiveness. This ratio would be of particular interest for users of federal financial reports who make decisions on agency appropriations (i.e., Congress).
- *Unassigned Program Cost to Total Program Cost Ratio:* The Unassigned Program Cost to Total Program Cost ratio is intended to be a measure of the accuracy to which the reporting entity can capture its costs and assign them to programs. The accurate assignment of program costs tends to lead to better understanding of the cost drivers of the reporting entity. This ratio provides an indication of or information about the service efforts, costs, and accomplishments of the reporting entity and falls under the Operating Performance objective. A high ratio may indicate that the reporting entity does not accurately capture its costs and therefore does not know the true cost of its operations or programs. A low ratio may indicate that the reporting entity does accurately capture its costs, knows the true costs of its operations and programs, and can make better informed operational decisions.

3. Stewardship

- *Total Asset Maintenance Ratio:* The Total Asset Maintenance Ratio is intended to be a measure of the level of appropriations used to maintain a given level of assets. This ratio provides an overall indication of the reporting entity's ability to manage its assets and therefore falls under the Stewardship objective as the lead ratio. A high Total Asset Maintenance Ratio may indicate that the reporting entity does not need to utilize a large

amount of funding to sustain its assets and that those assets may be self sustaining. A low Total Asset Maintenance Ratio may indicate that the reporting entity is reliant on appropriations to sustain a specific level of assets.

- *Fixed Assets to Total Assets Ratio:* The Fixed Assets to Total Assets Ratio is a measure of the fixed assets as a percentage of Total Assets. Fixed assets for most reporting entities will fall under the Plant, Property, and Equipment (PP&E) line item. However, other line items may need to be included depending on the classifications the reporting entity uses (refer to the required supplementary information and notes for clarification). This ratio is an indication of the proportion of assets that are tied up on long-term, relatively illiquid property. As an indication of the management of assets, this ratio falls under the Stewardship objective. The higher the ratio, the less flexible management of the reporting entity may be in making resource allocation decisions.
- *Inventory to Assets Ratio:* The Inventory to Assets ratio is a measure of the percentage of Total Assets that are made up of Inventory. Inventory in federal financial statements usually falls under the Inventory and Related Property line item but may fall under other line items depending on how the reporting entity decides to report. This ratio is an indication of the level of total assets that are tied up in inventory. Since government inventories typically are not held for resale, inventories on hand are a sunk cost and must be either used or disposed of by the reporting entity. Since the Inventory to Total Assets ratio is a measure of the reporting entity's ability to manage their assets, this ratio falls under the Stewardship Objective. A high ratio may indicate inefficiency in managing inventories while a low ratio may indicate the opposite.
- *Depreciation to Total Cost Ratio:* The Depreciation to Total Cost Ratio is intended to be a measure of the rate at which the reporting entity is depreciating their capitalized assets. This ratio provides a measure of both the reporting entity's ability to manage its assets and how the financial condition

of the reporting entity has changed as a result of its management decisions; therefore, this ratio falls under the Stewardship objective. Unlike private for-profit reporting entities who may attempt to maximize or minimize depreciation rates for tax and external financial reporting purposes, federal agencies should attempt to depreciate their assets at a rate which more accurately equates to actual usage of those assets. The Depreciation to Total Cost Ratio can not only be a good measure of the rate at which the reporting entity's assets are depreciating but also can be good indicator of the relative aggressiveness of the reporting entity's accounting policies.

- *Capital Investment Ratio:* The Capital Investment Ratio is intended to be a measure of the rate at which the reporting entity is investing in capital assets. Capital assets for most federal agencies will be plant, property, and equipment but may include other line items. As a measure of how the financial condition of the reporting entity has changed as a result of management decisions involving assets, this ratio falls under the Stewardship objective. A high Capital Investment Ratio may indicate that the reporting entity is expanding operations. A low Capital Investment Ratio may indicate that the reporting entity is not investing in capital assets at a rate which will sustain them, is contracting operations, or is putting off capital investment to a future period.

This chapter has developed a framework for financial ratio analysis of audited federal financial reports. In doing so, it has defined the objectives, focus, and purpose of financial ratio analysis of audited federal financial reports and has developed a set of ratios for each of the federal financial reporting objectives issues by the FASAB.

Chapter VI will summarize the research conducted in this thesis and provides areas of further study based upon the framework for financial ratio analysis developed.

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VI. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER STUDY

A. SUMMARY

This thesis has developed a framework for financial ratio analysis of audited federal financial reports. The users of audited federal financial reports can utilize this framework in the assessment of a federal agency's operational, performance, and financial status. The framework developed is based on the objectives of federal financial reporting as promulgated by the Federal Accounting Standards Advisory Board.

In 1990, the United States Congress passed the Chief Financial Officers Act, beginning a chain of legislation that was intended to improve financial accounting and reporting in the federal government. Included in this legislation was a mandate for the production of financial statements that fully disclose a federal entity's financial position and results of operations. It was believed that the disclosure of this type of information would enable decision-makers to understand the financial implications of budgetary, policy and program issues and provide an analytical tool for obtaining a deeper understanding of federal agency financial operations and conditions.

This thesis was researched in two phases: archival and analytical. The archival phase was utilized to gain insight into ratio analysis, existing frameworks, and federal financial reporting. The analytical phase was utilized to analyze the information gained in the archival phase, develop financial ratios from audited federal financial reports, and synthesize those ratios into a relevant framework. The archival research in this thesis comprises Chapters II through IV while the analytical phase is contained in Chapter V.

1. Archival Research Phase

The first area of archival research conducted in this thesis was on the theoretical and historical basis of ratios, ratio analysis and financial ratio analysis. This included a discussion on the origins of ratios and the historical use of ratios. This discussion ended with a detailed description of the historical basis of financial ratio analysis in the United States and the results of recent empirical studies in financial ratio analysis.

Ratios as a tool of analysis are measures between the relation of two items. When used as tools of financial statement analysis, financial ratios are only effective if the items on the financial statements are accurate and if the analyst has the ability to choose the appropriate ratio to fulfill the purpose for which the analysis is being conducted. The development of the use of ratios in financial statement analysis parallels the increase in the demand for, and sophistication of, financial statements.

The archival research phase then shifted to the frameworks for financial ratio analysis in the private for-profit sector, private not-for-profit sector, and the state and local government sector. This research included detailed descriptions of the objectives of financial reporting in each sector and the financial reports for each sector. Finally, frameworks for financial ratio analysis in each of the sectors were presented. Information pertaining to frameworks for financial ratio analysis in other sectors of the economy was useful in establishing examples with which to base a framework for financial ratio analysis of federal financial reports.

The final area of archival research conducted for this thesis was on the financial accounting and reporting environment unique to the federal government. This began with a description of recent legislation impacting federal financial accounting and reporting: the Chief Financial Officers Act of 1990, the Government Performance and Results Act of 1993, the Government Management Reform Act of 1994, and the Federal Financial Management Improvement Act of 1996. This recent legislation was the catalyst for consistent, audited, federal financial reports. Following a description of the recently passed legislation, the major standard setting bodies responsible for federal financial accounting and reporting were discussed. Finally, the required financial reports of federal agencies and the users and objectives of federal financial reporting were presented.

2. Analytical Research Phase

At the completion of the archival phase, the analytical phase of developing a framework for financial ratio analysis was conducted. This analytical phase began with a description of the objective, focus, and purpose of the framework for financial ratio analysis. The objective of the framework for financial ratio analysis is to provide those

users of federal financial reports relevant information that will assist them in making better informed resource allocation decisions. The focus of this framework was defined as the users and objectives of federal financial reporting as defined by the Federal Accounting Standards Advisory Board. The purpose of the framework for financial ratio analysis is to assist the users of federal financial reports in analyzing federal program and agency financial attributes in quantitative terms in the assessment of the federal agency's operational, performance, and financial status.

Following a description of the objective, focus and purpose, the methodology in developing financial ratios was explained and financial ratios developed. The methodology utilized was based on pragmatic empiricism. Financial ratios were developed under this methodology and presented for each of the objectives of federal financial reporting: Budgetary Integrity; Operating Performance; and, Stewardship. The ratios developed are contained in Tables 5-3, 5-4, and 5-5 on pages 109, 111, and 113 respectively.

After the financial ratios were developed for each of the objectives of federal financial reporting, the methodology for classifying the ratios into a framework was discussed. This methodology again was based on pragmatic empiricism and involved a two-step process of determining the lead ratio from each of the objectives and determining the second-tier ratios from each objective. Using this methodology, the framework for financial ratio analysis of audited federal financial reports was developed and is presented. The framework for financial ratio analysis of audited federal financial reports is displayed in Table 5-6 on page 116.

B. CONCLUSIONS

Ratio analysis is a proven method of analyzing financial statements. It has been proven both historically and through empirical studies. Ratios and ratio analysis have been used in the private business sector by creditors, managers, and investors since the 1890s. As ratios and ratio analysis are applicable in other sectors of the economy, they are also applicable to the federal financial reporting environment.

Frameworks for financial ratio analysis have been developed in other sectors of the economy: the private for-profit sector, private not-for-profit sector, and the state and local government sector. These frameworks have been developed and based upon the specific needs of the users and the objectives of financial reporting in each sector. Frameworks from other sectors of the economy are not directly applicable to the federal financial reporting environment because of:

- Differing objectives of financial reporting.
- Differing users of financial reporting.
- Uniqueness of the federal financial reporting environment.

Therefore, a framework for financial ratio analysis of audited federal financial reports has to take these differences into consideration.

There are numerous methods by which a framework for financial ratio analysis of audited federal financial reports could be developed. The pragmatic approach based upon the objectives of federal financial reporting was chosen for two reasons. First, the pragmatic approach is the traditional approach by which frameworks for financial ratio analysis have been developed in other sectors of the economy. The use of the pragmatic approach was therefore used in an effort to pattern the development of ratio analysis of audited federal financial reports after the development of ratio analysis in other sectors of the economy. Secondly, the objectives for federal financial reporting were utilized as the basis of the framework as they were well documented and applied to all federal agencies. This allowed for the objectives based approach to be a defensible position on which to develop a framework for financial ratio analysis of audited federal financial reports at this early stage of federal financial reporting.

It is important that the framework for financial ratio analysis be applied to <u>audited</u> federal financial reports. This is for two reasons. First, the need for the reports to be audited stems from the theoretical basis of ratio analysis. For ratios and ratio analysis to be valid and provide some meaningful information relies on the underlying validity of the financial information. The validity of this financial information rests upon the auditor's opinion of the financial statements. Second, the framework for financial ratio analysis of

audited federal financial reports developed in this thesis analyzes the objectives of Budgetary Integrity, Operating Performance, and Stewardship. In order for the final objective of Systems and Control to be tested, the financial statements must be audited.

The requirement for audited federal financial reports may prove to be an insurmountable hurdle for some federal agencies and programs at this time. However, this should not diminish the relevance or applicability of the framework developed in this thesis. The framework developed by this thesis is an innovative concept in the federal financial reporting environment that requires the federal agency under evaluation to move sufficiently far enough from budgetary accounting and reporting to proprietary accounting and reporting. As all federal agencies continue to move from budgetary accounting and reporting to proprietary accounting and reporting (as required by recent legislation outlined in this thesis), this framework for financial ratio analysis of audited federal financial reports and other means of analyzing federal financial reports will become more important in assessing the operational, performance, and financial status of the agency under consideration.

C. AREAS FOR FURTHER STUDY

As the framework for financial ratio analysis of audited federal financial reports developed by this thesis is based theoretically upon pragmatic empiricism, areas for further study should principally be empirically based. Empirical research could be conducted in the following areas:

- Validation/Invalidation of the framework for financial ratio analysis presented.
- Time-series and cross-sectional analysis of ratios developed for federal agencies.
- Other uses of the framework for financial ratio analysis.

1. Validation of the framework for financial ratio analysis presented.

A framework for financial ratio analysis of audited federal financial reports has been developed in this thesis based on pragmatic empiricism. An empirical validation of this framework should be conducted using an inductive approach. An inductive approach

is characterized by the use of data and statistical methods for grouping financial ratios. Statistical methods include factor analysis and transformation analysis.

2. Time-series and cross-sectional analysis of ratios developed for federal agencies.

Financial ratios are typically used in an analysis in one of two ways: time-series or cross-sectional analysis. Time-series analysis is concerned with the behavior of a given ratio over time. Cross-sectional analysis involves comparisons between one reporting entity's ratios and those of a related entity. Empirical research could be conducted on agency financial statements to determine if time-series and cross-sectional analysis utilizing the framework for financial ratio analysis presented in this thesis can be utilized by federal agencies.

3. Other uses of the framework for financial ratio analysis.

Besides time-series and cross-sectional analysis, empirical research could be conducted to determine if there are other uses of the framework for financial ratio analysis in managing government operations. This could include the use of the framework for financial ratio analysis and other financial ratios in performance evaluations and in management controls.

APPENDIX A. DEPARTMENT OF ENERGY 1998 PRINCIPAL FINANCIAL STATEMENTS

Principal Financial Statements

DOE's financial statements have been prepared to report the financial position and results of operations of the Department of Energy, pursuant to the requirements of the Chief Financial Officers Act of 1990 and the Government Management Reform Act of 1994.

While the statements have been prepared from the books and records of DOE in accordance with the formats prescribed by the Office of Management and Budget, the statements are different from the financial reports used to monitor and control budgetary resources which are prepared from the same books and records.

The statements should be read with the understanding that they are for a component of a sovereign entity, that liabilities not covered by budgetary resources cannot be liquidated without the enactment of an appropriation, and that payment of all liabilities other than for contracts can be abrogated by the sovereign entity.

Consolidated Balance Sheet
As of September 30, 1998 and 1997

		(in millions)
	1998	1997
ASSETS		
Intragovernmental		
Fund balance with Treasury (Note 2)	$11,169	$10,546
Investments (Note 3)	10,200	8,147
Accounts Receivable, Net (Note 4)	482	556
Regulatory Assets (Note 5	5,228	5,228
Other Assets	5	7
Investments (Note 3)	263	245
Accounts Receivable, Net (Note 4)	4,583	4,649
Inventory, Net (Note 6)		
Strategic Petroleum Reserve	15,087	15,087
Nuclear Materials	21,728	22,531
Other Inventory	504	521
General Property, Plant, and Equipment, Net (Note 7)	19,840	20,756
Regulatory Assets (Note 5)	8,031	7,936
Other Assets	827	592
Total Assets	$97,947	$96,801
LIABILITIES		
Liabilities Covered by Budgetary Resources		
Intragovernmental Liabilities		
Accounts Payable (Note 8)	$119	$140
Debt (Note 9)	8,906	9,083
Appropriated Capital Owed to Treasury (Note 10)	1,986	2,309
Deferred Revenues (Note 11)	217	244
Other Liabilities (Note 12)	260	250
Accounts Payable (Note 8)	3,276	3,584
Debt (Note 9)	7,056	7,166
Deferred Revenues (Note 11)	11,065	9,351
Other Liabilities (Note 12)	2,030	1,423
Funded Environmental Liabilities (Note 13)	918	1,148
Total Liabilities Covered By Budgetary Resources	$35,833	$34,698
Liabilities Not Covered By Budgetary Resources		
Environmental Liabilities (Note 13)	185,495	179,466
Pension and Other Actuarial Liabilities (Note 14)	6,508	6,282
Other Unfunded Liabilities (Note 15)	1,934	1,332
Contingencies (Note 16)	506	11
Total Liabilities Not Covered By Budgetary Resources	$194,443	$187,091
Total Liabilities	$230,276	$221,789
NET POSITION		
Unexpended Appropriations (Note 17)	4,939	5,368
Cumulative Results of Operations	(137,268)	(130,356)
Total Net Position	($132,329)	($124,988)
Total Liabilities and Net Position	$97,947	$96,801

The accompanying notes are an integral part of these statements.

Consolidated Statements of Net Cost
For the Years Ended September 30, 1998 and 1997

	(in millions) 1998	1997
Costs		
Energy Resources (Note 18)		
Program Costs	$4,848	$4,834
Net Gain on Sale of Naval Petroleum Reserves	($2,848)	
Earned Revenues	(3,127)	(3,727)
Net Cost of Energy Resources Programs	($1,127)	$1,107
National Security (Note 19)		
Program Costs	$5,726	$5,876
Earned Revenues	(3)	(41)
Net Cost of National Security Programs	$5,723	$5,835
Environmental Quality (Note 20)		
Program Costs	$637	$1,246
Earned Revenues	(296)	(248)
Net Cost of Environmental Quality Programs	$341	$998
Science & Technology (Note 21)		
Program Costs	$2,583	$2,562
Earned Revenues	(13)	(11)
Net Cost of Science & Technology Programs	$2,570	$2,551
Other Programs (Note 22)		
Program Costs	$2,255	$2,422
Earned Revenues	(2,171)	(2,251)
Net Cost of Other Programs	$84	$171
Costs Not Assigned to Programs (Note 23)	13,379	(45,888)
Less Earned Revenues Not Attributable to Programs	(14)	(23)
Net Cost of Operations	$20,956	($35,249)

The accompanying notes are an integral part of these statements.

Consolidated Statements of Changes in Net Position
For the Years Ended September 30, 1998 and 1997

		(in millions)
	1998	1997
Net Cost of Operations	($20,956)	$35,249
Financing Sources (Other Than Exchange Revenues)		
Appropriations Used	16,861	17,550
Taxes (and Other Non-Exchange Revenues)	2	(11)
Imputed Financing	79	97
Transfers-in	0	(100)
Transfers-out	(3,612)	(928)
Net Results of Operations	($7,626)	$51,857
Prior Period Adjustments (Note 24)	37	(6,076)
Net Change in Cumulative Results of Operations	($7,589)	$45,781
Change in Nuclear Waste Fund Deferred Revenues	945	211
Increase (Decrease) in Unexpended Appropriations	(697)	(533)
Change in Net Position	($7,341)	$45,459
Net Position - Beginning of Period	(124,988)	(170,447)
Net Position - End of Period	($132,329)	($124,988)

Consolidated Statements of Budgetary Resources
For the Years Ended September 30, 1998 and 1997

		(in millions)
	1998	1997
BUDGETARY RESOURCES		
Budgetary Authority	$17,103	$16,990
Unobligated Balances - Beginning of Period	2,464	2,651
Spending Authority from Offsetting Collections	4,696	4,640
Adjustments	(167)	(32)
Total Budgetary Resources	$24,096	$24,249
STATUS OF BUDGETARY RESOURCES		
Obligations Incurred	21,921	21,429
Unobligated Balances Available	2,690	3,358
Unobligated Balances - Not Available	(515)	(538)
Total, Status of Budgetary Resources	$24,096	$24,249
OUTLAYS		
Obligations Incurred	21,921	21,429
Less Spending Authority from Offsetting Collections and Adjustments	(4,725)	(4,671)
Obligated Balance, Net - Beginning of Period	7,903	8,487
Obligated balance Transferred, Net	2	2
Less Obligated balance, Net - End of Period	(8,072)	(7,903)
Total Outlays	$17,029	$17,344

The accompanying notes are an integral part of these statements.

Consolidated Statements of Financing
For the Years Ended September 30, 1998 and 1997

	1998	*(in millions)* 1997
OBLIGATIONS AND NONBUDGETARY RESOURCES		
Obligations Incurred		
Category A, Direct	$19,897	$19,391
Reimbursable	2,024	2,038
Less Spending Authority from Offsetting Collections and Adjustments		
Earned Reimbursements		
Collected	(4,982)	(4,875)
Receivable from Federal Sources	54	8
Change in Unfilled Orders (Decreases) Increases	(65)	163
Recoveries of Prior-Year Obligations	(28)	(34)
Financing Imputed for Cost Subsidies	78	82
Transfers Out (Note 25)	(3,612)	(1,028)
Exchange Revenues Not In the Budget	1,549	1,260
Other	(212)	(248)
Total Obligations as Adjusted, and Nonbudgetary Resources	$14,703	$16,757
RESOURCES THAT DO NOT FUND NET COST OF OPERATIONS		
Change in Amount of Goods, Services, and Benefits Ordered but Not Yet Received or Provided	102	374
Costs Capitalized on the Balance Sheet		
General Property, Plant, and Equipment	(1,274)	(1,595)
Purchases of Inventory	(463)	(523)
Financing Sources That Fund Costs of Prior Periods	(6,301)	(6,037)
Other	(1,410)	(1,565)
Total Resources that Do Not Fund Net Cost of Operations	($9,346)	($9,346)
COSTS THAT DO NOT REQUIRE RESOURCES		
Depreciation and Amortization	1,875	1,902
Revaluation of Assets and Liabilities	(161)	626
Loss on Disposition of Assets	484	23
Other	630	2,876
Total Costs That Do Not Require Resources	$2,828	$5,427
FINANCING SOURCES YET TO BE PROVIDED (Note 26)	12,771	(48,087)
NET COST OF OPERATIONS	$20,956	($35,249)

The accompanying notes are an integral part of these statements.

Consolidated Statements of Custodial Activities
For the Years Ended September 30, 1998 and 1997

	1998	1997
	(in millions)	
SOURCES OF COLLECTIONS (Note 27)		
Cash Collections		
Power marketing administrations	$428	$438
Petroleum Pricing Violation Escrow Fund	74	80
Other	3	3
Net Collections	$505	$521
Accrual Adjustment		
Power marketing administrations	12	4
Petroleum Pricing Violation Escrow Fund	(50)	(53)
Total Revenue	$467	$472
DISPOSITION OF REVENUE		
Transferred to Others		
Treasury	(440)	(537)
Other	(57)	(51)
Increase (Decrease) in Amounts to be Transferred	53	148
Collections Used for Refunds and Other Payments	(2)	(2)
Retained by DOE	(21)	(30)
Net Custodial Activity	$0	$0

The accompanying notes are an integral part of these statements.

APPENDIX B. FINANCIAL RATIO CALCULATIONS FOR DEPARTMENT OF ENERGY 1998 PRINCIPAL FINANCIAL STATEMENTS

Ratio Name	Objective	Calculation	Total
Budget Authority to Budgetary Resources	Budgetary Integrity	$\frac{17,103}{24,096}$	.71
Other Sources of Funds to Budgetary Resources	Budgetary Integrity	$\frac{24,096 - 17,103}{24,096}$	.29
Budget Authority to Outlays	Budgetary Integrity	$\frac{17,103}{17,029}$	1.004
Outlays to Obligations	Budgetary Integrity	$\frac{17,029}{21,921}$	.777
Obligations to Budget Authority	Budgetary Integrity	$\frac{17,196}{17,103}$	1.005
Compliance/Antideficiency Ratio	Budgetary Integrity	$\frac{21,921}{24,096}$	.91
Return on Budget Authority	Budgetary Integrity	$\frac{17,209}{17,103 + (2464 - 2175)}$	.989
Return on Total Resources	Budgetary Integrity	$\frac{17,209}{24,096}$	.714
Utilization Ratio	Budgetary Integrity	$\frac{17,103 + (2464 - 2175)}{24,096}$	.722
Reliance on Other Sources of Funding Ratio	Budgetary Integrity	$\frac{21,921 - 17,103}{17,103}$	.282
Percentage of Uncovered Liabilities	Budgetary Integrity	$\frac{194,443}{24,096}$	8.07
Liabilities to Assets	Operating Performance	$\frac{230,276}{97,947}$	2.351
Operating Efficiency Ratio	Operating Performance	Information Net Available	Information Not Available
Net Cost of Operations to Appropriations	Operating Performance	$\frac{20,956}{16,861}$	1.243
Return on Fixed Assets	Operating Performance	$\frac{19,840}{(7,626)}$	(.384)
Net Cost of Operations Growth	Operating Performance	$\frac{20,956 - (35,249)}{(35,249)}$	1.594
Unassigned Program Costs to Program Expenses	Operating Performance	$\frac{4848 + 5726 + 637 + 2583 + 2255}{13,379}$	.833
Unassigned Costs to Net Cost of Operations	Operating Performance	$\frac{13,379}{20,956}$	.638
Return on Net Cost	Operating Performance	$\frac{(7,626)}{20,956}$	(.364)
Return on Appropriated Funds	Operating Performance	$\frac{(7,626)}{16,861}$	(.452)

Fixed Assets to Total Assets	Stewardship	19,840 / 97,947	.203
Fixed Assets to Equity	Stewardship	19,840 / (132,329)	(.15)
Depreciation Rate	Stewardship	1,875 / 19,840	.095
Inventory to Assets	Stewardship	15,087 + 21,728 + 504 / 97,947	.381
Depreciation to Total Cost	Stewardship	1,875 / 4848 + 5726 + 637 + 2583 + 2255 + 13379	.064
Capital Investment Ratio	Stewardship	19,840 – 20,756 / 97947	(.009)
Total Assets Maintenance Ratio	Stewardship	97,947 / 16,861	5.809
Fixed Assets Maintenance Ratio	Stewardship	19,840 / 16,861	1.177
Receivables Management	Stewardship	4,583 / 97,947	.047

APPENDIX C. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION 1998 PRINCIPAL FINANCIAL STATEMENTS

Financial Statements

Introduction to Financial Statements

These financial statements reflect the overall financial position of NASA offices and activities, including assets and liabilities, and the results of operations, pursuant to the requirements of 31 U. S. C. 3515b. The statements have been prepared from NASA's books and records.

These statements are in addition to separate financial reports prescribed by the Office of Management and Budget (OMB) and the U.S. Department of the Treasury that are used to monitor and control budgetary resources, which are prepared from the same books and records. The statements should be read with the understanding that they are for a component of the U. S. Government, a sovereign entity. For example, NASA's Fund Balance is held by Treasury, another Federal agency. Also, NASA has no authority to pay liabilities not covered by budgetary resources. Liquidation of such liabilities requires enactment of an appropriation.

For FY 1998, NASA is reporting under five new financial statement formats prescribed by OMB in response to Statements of Federal Financial Accounting Standards recommended by the Federal Accounting Standards Advisory Board and approved by OMB, U.S. Department of the Treasury, and the General Accounting Office.

The **Statement of Financial Position** is similar to the one prepared for FY 1997, and is analogous to balance sheets reported in the private sector. It provides information on assets, liabilities, and net position.

The **Statement of Net Cost** relates to the Statement of Operations and Changes in Net Position reported for FY 1997, and is analogous to profit and loss statements in the private sector.

The **Statement of Changes in Net Position** expands upon the Statement of Operations and Changes in Net Position reported for FY 1997.

The **Statement of Budgetary Resources** is a new statement for FY 1998 and provides information on how budgetary resources were made available and their status at the end of the year.

The **Statement of Financing** is a new statement for FY 1998 and provides a reconciliation to ensure a proper relationship between budgetary balances and transactions and other financial balances and transactions.

In addition to the five new financial statement formats, the **Required Supplementary Stewardship Information** provides information on NASA's Heritage Assets and on its spending on research and development.

In addition to changing its reporting formats, NASA has changed its accounting principles and practices as required by Federal accounting standards effective for FY 1998. NASA is presenting its programs on a full cost basis and is presenting its assets on a changed basis. These changes include, among others, increases to show the cost of assets in space and decreases for depreciation and for heritage assets, as discussed in footnotes to the financial statements.

NASA received consecutive "Unqualified Opinions" on its financial statements for fiscal years 1994, 1995, 1996, 1997, and 1998. The first two were from NASA's Inspector General. The last three were from an independent public accounting firm. These were major milestones in NASA's continuing quest for financial management excellence.

National Aeronautics and Space Administration
Statement of Financial Position
as of September 30
(In Thousands)

Assets:	1998	1997
Intragovernmental Assets:		
Fund Balance With Treasury (Note 2)	$ 6,256,007	$ 6,857,980
Investments (Note 3)	16,759	18,416
Accounts Receivable, Net (Note 4)	153,825	170,325
Advances and Prepaid Expenses	4,234	57,018
Total Intragovernmental Assets	6,430,825	7,103,739
Governmental Assets:		
Accounts Receivable, Net (Note 4)	4,662	5,418
Advances and Prepaid Expenses	190	0
Operating Materials and Supplies (Note 5)	2,280,577	2,119,283
Property, Plant, and Equipment, Net (Note 6)	21,367,659	27,593,191
Total Assets	**$ 30,083,913**	**$ 36,821,631**
Liabilities:		
Liabilities Covered by Budgetary Resources:		
Intragovernmental Liabilities:		
Accounts Payable	$ 275,318	$ 353,519
Other Liabilities (Note 7)	18,529	46,046
Total Intragovernmental Liabilities	293,847	399,565
Governmental Liabilities:		
Accounts Payable	2,840,341	2,995,942
Other Liabilities (Note 7)	163,481	132,595
Total Liabilities Covered by Budgetary Resources	3,297,669	3,528,102
Liabilities Not Covered by Budgetary Resources:		
Intragovernmental Liabilities:		
Other Liabilities (Note 7)	17,158	4,954
Governmental Liabilities:		
Environmental Cleanup Costs	1,405,372	1,466,784
Actuarial	51,455	56,891
Other Liabilities (Note 7)	239,194	215,778
Total Liabilities Not Covered by Budgetary Resources	1,713,179	1,744,407
Total Liabilities	**$ 5,010,848**	**$ 5,272,509**
Net Position:		
Unexpended Appropriations (Note 9)	$ 3,116,819	$ 3,559,741
Cumulative Results of Operations	21,956,246	27,989,381
Total Net Position	**$ 25,073,065**	**$ 31,549,122**
Total Liabilities and Net Position	**$ 30,083,913**	**$ 36,821,631**

The accompanying notes are an integral part of these statements.

National Aeronautics and Space Administration
Statement of Net Cost
for the Fiscal Year Ended September 30, 1998
(In Thousands)

Program/Operating Expenses By Enterprise:	
Human Exploration and Development of Space:	
Space Shuttle	$ 3,369,846
Space Station	2,500,525
Life and Microgravity	399,309
U.S./Russian Cooperative	152,625
Payload Utilization and Operations	401,528
Total Human Exploration and Development of Space	6,823,833
Space Science:	
Space Science	2,288,063
Planetary Exploration	48,322
Total Space Science	2,336,385
Earth Science:	
Mission to Planet Earth	1,742,607
Total Earth Science	1,742,607
Aero-Space Technology:	
Aeronautics Research and Technology	1,375,934
Space Access and Technology	678,036
Commercial Programs	143,986
Total Aeronautics and Space Transportation	2,197,956
Total Enterprise Program Costs	13,100,781
Costs Not Assigned to Enterprises:	
Mission Communication Services	444,933
Space Communication Services	254,440
Academic Programs	147,583
Other Programs	218,109
Trust Funds	1,457
Reimbursable Expenses (Note 10)	715,407
Total Costs Not Assigned to Enterprises	1,781,929
Total Program Expenses	14,882,710
Costs Not Assigned to Programs:	
Change in Unfunded Expenses	(29,923)
Depreciation Expense	2,013,438
Funded Increases in Capitalized Property and Inventory, Net	(2,018,558)
Total Costs Not Assigned to Programs	(35,043)
Less: Earned Revenues Not Attributable to Programs	(715,407)
Deferred Maintenance (Note 12)	
Net Cost of Operations	$ 14,132,260

The accompanying notes are an integral part of these statements.

National Aeronautics and Space Administration
Statement of Changes in Net Position
for the Fiscal Year Ended September 30, 1998
(In Thousands)

Net Cost of Operations	$ (14,132,260)
Financing Sources:	
Appropriations Used	14,061,658
Net Property Transfers	(64)
Interest Revenue, Federal	1,493
Imputed Financing	104,548
Other Revenues	25,772
Less: Receipts Transferred to Treasury	(25,772)
Net Results of Operations	35,375
Prior Period Adjustments (Note 11)	(6,068,510)
Net Change in Cumulative Results of Operations	(6,033,135)
Decrease in Unexpended Appropriations	(442,922)
Change in Net Position	(6,476,057)
Net Position-Beginning of Period	31,549,122
Net Position-End of Period	**$ 25,073,065**

The accompanying notes are an integral part of these statements.

National Aeronautics and Space Administration
Statement of Budgetary Resources
for the Fiscal Year Ended September 30, 1998
(In Thousands)

Budgetary Resources:	
Budget Authority	$ 13,649,576
Unobligated Balances-Beginning of Period	1,067,624
Net Transfers of Prior-Year Balances, Actual	(45)
Spending Authority from Offsetting Collections	630,046
Total Budgetary Resources	**$ 15,347,201**
Status of Budgetary Resources:	
Obligations Incurred	$ 14,403,873
Unobligated Balances-Available	785,816
Unobligated Balances-Not Available	157,512
Total Status of Budgetary Resources	**$ 15,347,201**
Outlays:	
Obligations Incurred	$ 14,403,873
Less: Spending Authority from Offsetting Collections	(630,046)
Obligations Incurred, Net	13,773,827
Obligated Balance, Net-Beginning of Period	5,682,252
Less: Obligated Balance, Net-End of Period	(5,249,872)
Total Outlays	**$ 14,206,207**

The accompanying notes are an integral part of these statements.

National Aeronautics and Space Administration
Statement of Financing
for the Fiscal Year Ended September 30, 1998
(In Thousands)

Obligations and Nonbudgetary Resources:	
Obligations Incurred	$ 14,403,873
Less: Spending Authority from Offsetting Collections	(630,046)
Financing Imputed for Cost Subsidies	104,548
Total Obligations as Adjusted and Nonbudgetary Resources	**13,878,375**
Resources That Do Not Fund Net Cost of Operations:	
Change in Amount of Goods, Services, and Benefits Ordered but Not Yet Received or Provided	288,928
Costs Capitalized in the Statement of Financial Position	(2,018,558)
Total Resources That Do Not Fund Net Cost of Operations	**(1,729,630)**
Costs That Do Not Require Resources:	
Depreciation	2,013,438
Total Costs That Do Not Require Resources	**2,013,438**
Change in Financing Sources Yet to Be Provided	**(29,923)**
Net Cost of Operations	**$ 14,132,260**

The accompanying notes are an integral part of these statements.

APPENDIX D. FINANCIAL RATIO CALCULATIONS FOR THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION 1998 PRINCIPAL FINANCIAL STATEMENTS

Ratio Name	Objective	Calculation	Total
Budget Authority to Budgetary Resources	Budgetary Integrity	$\frac{13,649,576}{15,347,201}$	.889
Other Sources of Funds to Budgetary Resources	Budgetary Integrity	$\frac{15,347,201 - 13,649,576}{15,347,201}$	.111
Budget Authority to Outlays	Budgetary Integrity	$\frac{13,649,576}{14,206,207}$	.961
Outlays to Obligations	Budgetary Integrity	$\frac{14,206,207}{14,403,873}$	.986
Obligations to Budget Authority	Budgetary Integrity	$\frac{13,773,827}{13,649,576}$	1.009
Compliance/Antideficiency Ratio	Budgetary Integrity	$\frac{14,403,873}{15,347,201}$	.939
Return on Budget Authority	Budgetary Integrity	$\frac{14,206,207}{13,649,576 + (1,067,624 - 943,328)}$	1.031
Return on Total Resources	Budgetary Integrity	$\frac{14,206,207}{15,347,201}$	.926
Utilization Ratio	Budgetary Integrity	$\frac{13,649,576 + (1,067,624 - 943,328)}{15,347,201}$	.897
Reliance on Other Sources of Funding Ratio	Budgetary Integrity	$\frac{14,403,873 - 13,649,576}{13,649,576}$	.055
Percentage of Uncovered Liabilities	Budgetary Integrity	$\frac{1,713,179}{15,347,201}$	.112
Liabilities to Assets	Operating Performance	$\frac{5,010,848}{30,083,913}$	.167
Operating Efficiency Ratio	Operating Performance	Information Not Available	Information Not Available
Net Cost of Operations to Appropriations	Operating Performance	$\frac{14,132,260}{14,061,658}$	1.005
Return on Fixed Assets	Operating Performance	$\frac{21,367,659}{35,375}$	.16
Net Cost of Operations Growth	Operating Performance	Information Not Available	Information Not Available
Unassigned Program Costs to Program Expenses	Operating Performance	$\frac{1,781,929 - (35,043)}{14,882,710}$	.117
Unassigned Costs to Net Cost of Operations	Operating Performance	$\frac{1,781,929 - (35,043)}{14,132,260}$	.123
Return on Net Cost	Operating Performance	$\frac{35,375}{14,132,260}$	.25
Return on Appropriated Funds	Operating Performance	$\frac{35,375}{14,061,658}$	.25

Fixed Assets to Total Assets	Stewardship	21,367,659 / 30,083,913	.71
Fixed Assets to Equity	Stewardship	21,367,659 / 25,073,065	.852
Depreciation Rate	Stewardship	2,013,438 / 21,367,659	.094
Inventory to Assets	Stewardship	2,280,577 / 30,083,913	.076
Depreciation to Total Cost	Stewardship	2,013,438 / 14,882,710	.135
Capital Investment Ratio	Stewardship	21,367,659 – 27,593,191 / 30,083,913	(.207)
Total Assets Maintenance Ratio	Stewardship	30,083,913 / 14,061,658	2.139
Fixed Assets Maintenance Ratio	Stewardship	21,367,659 / 14,061,658	1.52
Receivables Management	Stewardship	158,487 / 30,083,913	.005

LIST OF REFERENCES

1. Smith, David Eugene, *History of Mathematics, Vol. II*, (Ginn and Company: Boston, MA, 1925).
2. *The Oxford English Dictionary, Vol. VII,* (Oxford University Press: London, England, 1933).
3. Siegel, Joel G. and Shim, Jae K., *Dictionary of Accounting Terms*, (Barron's Educational Series: Hauppauge, NY, 1987).
4. Shao, Stephen P., *Mathematics for Management and Finance, 3rd ed.*, (South-Western Publishing Company, Cincinnati, OH, 1974).
5. Bell, Eric T., *The Development of Mathematics*, (McGraw-Hill Book Company, New York, 1945).
6. Horrigan, James O., "A Short History of Financial Ratio Analysis", *The Accounting Review*, (April 1968).
7. Lev, Baruch, *Financial Statement Analysis: A New Approach*, (Prentice-Hall, Englewood Cliffs, NJ, 1974).
8. Kennedy, Ralph D. and McMullen, Stewart Y., *Financial Statements: Forms, Analysis, and Interpretation, 6th ed.*, (Richard D. Irwin, Homewood, IL, 1973).
9. Gates, Sheldon, *101 Business Ratios*, (McLane Publications, Scottsdale, AZ, 1993).
10. Foulke, Roy A., *Practical Financial Statement Analysis, 5th ed.*, (McGraw-Hill Book Company, New York, 1961).
11. Wall, Alexander, Study of Credit Baromotrics, Federal Reserve Bulletin (March 1919).
12. Du Pont de Nemours, E.I and Company, Executive Committee Control Charts: A Description of the Du Pont Chart System for Appraising Operating Performance, American Management Association Bulletin, No. 6, 1961.
13. Sloan, Alfred P., *My Years with General Motors*, (Bantam Doubleday Dell Publishing Group, New York, 1963).
14. Bliss, James H., *Financial and Operating Ratios in Management*, (The Ronald Press Company, 1923).
15. Gilman, Stephen, *Analyzing Financial Statements*, (The Ronald Press Company, 1925).
16. Winakor, Arthur H. and Smith, Raymond F., A Test Analysis of Unsuccessful Industrial Companies, (Bulletin No. 31; Urbana, IL: University of Illinois, Bureau of Business Research, 1930).
17. Fitzpatrick, Paul J., *Symptoms of Industrial Failures*, (Catholic University of America Press, Washington, DC, 1931).
18. Ramser, J.R. and Foster, Louis O., A Demonstration of Ratio Analysis, (Bulletin No. 40; Urbana, IL: University of Illinois, Bureau of Business Research, 1931).
19. Sorter, George and Becker, Selwyn, "Accounting and Financial Decisions and 'Corporate Personality' – Some Preliminary Findings", *Journal of Accounting Research*, (Autumn, 1964).

20. Brown, Isadore, *The Historical Development of the Use of Ratios in Financial Statement Analysis to 1933*, (Catholic University of America Press, Washington, D.C., 1955).
21. McDonald, Bill and Morris, Michael H., "The Statistical Validity of the Ratio Method in Financial Analysis: An Empirical Examination", *Journal of Business Finance & Accounting*, (Spring, 1984).
22. Deakin, Edward B., "Distributions of Financial Accounting Ratios: Some Empirical Evidence", *The Accounting Review*, (January, 1966).
23. Lev, Baruch and Sunder, Shyam, "Methodological Issues in the Use of Financial Ratios", *Journal of Accounting and Economics*, (1, 1979).
24. Salmi, Timo and Martikainen, Teppo, "A review of the Theoretical and Empirical Basis of Financial Ratio Analysis", *The Finnish Journal of Business Economics*, (April 1994).
25. Financial Accounting Standards Board, Statement of Financial Accounting Concepts No. 1, "*Objectives of Financial Reporting by Business Enterprises*", November 1978.
26. Financial Accounting Standards Board, Statement of Financial Accounting Concepts No. 6, "Elements of Financial Statements", December 1985.
27. Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 130, "Reporting Comprehensive Income", June 1997.
28. Gibson, Charles H., *Financial Statement Analysis, 4th ed.*, (PWS-Kent Publishing Company, Boston, MA, 1989).
29. Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 95, "*Statement of Cash Flows*", November 1987.
30. Campsey, B.J., and Brigham, Eugene F., *Introduction to Financial Management, 3rd ed.*, (The Dryden Press, Chicago, IL, 1991).
31. Financial Accounting Standards Board, Statement of Financial Accounting Concepts No. 4, "Objectives of Financial Reporting by Non-business Organizations", December 1980.
32. Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 117, "Financial Statements of Not-for-Profit Organizations", June 1993.
33. Herzlinger, Regina E., and Nitterhouse, Denise, "Financial Accounting and Managerial Control for Nonprofit Organizations", (South-Western Publishing Company, Cincinnati, OH, 1994).
34. Greenlee, Janet S., and Bukovinsky, David, "Financial Ratios for Use in the Analytical Review of Charitable Organizations", *The Ohio CPA Journal*, (January-March, 1998).
35. Governmental Accounting Standards Board, "Facts About GASB", [http://www.rutgers.edu/Accounting/raw/gasb/facts/mission.html], August 1999.
36. Governmental Accounting Standards Board, Concepts Statement No. 1, "Objectives of Financial Reporting", May 1987.
37. Engstrom, John H., and Hay, Leon E., *Essentials of Governmental Accounting for Public Administrators*, (Richard D. Irwin Inc., Burr Ridge, IL, 1994).
38. Granof, Michael H., *Government and Not-For-Profit Accounting*, (John Wiley & Sons, Inc., New York, 1998).

39. Zehms, Karl M., "Proposed Financial Ratios for Use in Analysis of Municipal Annual Financial Reports", *The Government Accountants Journal*, (fall, 1991).
40. Groves, Sanford M., Godsey, W. Maureen, and Shulman, Martha A., "Financial Indicators for Local Government", *Public Budgeting and Finance*, (summer, 1981).
41. Brown, Kenneth W., "Ten-Point Test of Financial Condition", [http://courses.smsu.edu/kwb237f/10point/index.htm], August 1999.
42. Wacht, Richard F., Financial Management in Non-Profit Organizations, (Georgia State University, Atlanta, GA, 1984).
43. Office of Management and Budget, Statement of Federal Financial Accounting Concepts No. 1, "Objectives of Federal Financial Reporting", September 1993.
44. United States Constitution
45. Wilson, Earl R., Hay, Leon E., and Kattelus, Susan C., *Accounting for Governmental and Nonprofit Entities, 11th ed.*, (Irwin McGraw-Hill: Boston, MA, 1999).
46. U.S. Department of the Treasury, Office of Strategic Planning and Evaluation, "Mission, Goals and Results", [http://www.ustreas.gov./gpra/], September 1999.
47. U.S. Department of the Treasury, "The Duties and Functions of the Treasury Department, its Offices and Bureaus", [http://www.ustreas.gov./opc/opc0042.html], September 1999.
48. Office of Management and Budget, "OMB's Role", [http://www.whitehouse.gov/omb/organization/role.html], September 1999.
49. Office of Management and Budget, "The Mission and Structure of the Office of Management and Budget", [http://www.whitehouse.gov/omb/organization/mission.html], September 1999.
50. Freeman, Robert J., and Shoulders, Craig D., "Governmental and Non Profit Accounting", (Prentice-Hall Inc., Upper Saddle River, NJ, 1999).
51. United States General Accounting Office, "Organization and Mission", [http://www.gao.gov/about.gao/aboutgao.htm], September 1999.
52. Federal Accounting Standards Advisory Board, "FASAB Facts", 1997.
53. Office of Management and Budget, OMB Circular A-134, " Financial Accounting Principles and Standards", May 1993.
54. Federal Accounting Standards Advisory Board, "Charter of the Accounting and Auditing Policy Committee", [http://www.financenet.gov/financenet/fed/aapc/charter.htm], September 1999.
55. Steinhoff, Jeffrey C., "Challenges of the CFO Act", *The Government Accountants Journal*, (spring, 1991).
56. Public Law 101-576, 101st Congress, "Chief Financial Officers Act of 1990".
57. Buckner, E. Charles, "The Chief Financial Officers Act of 1990:An analysis of its Implementation within the Department of Defense", Thesis, Naval Postgraduate School, December, 1994.
58. Public Law 103-62, 103rd Congress, "Government Performance and Results Act of 1993".
59. Joint Financial Management Improvement Program, "Government Management Reform Act", *JFMIP News*, (fall, 1994).
60. S-2170, 103rd Congress, "Government Management Reform Act of 1994".

61. Public Law 104-208, 104th Congress, Federal Financial Management Improvement Act of 1996".
62. Jones, L.R., and McCaffery, Jerry, *Financial Management Reform in the Federal Government*, in Meyers, Roy T., ed., "Handbook of Government Budgeting", (Jossey-Bass Inc., San Francisco, CA, 1999).
63. United States General Accounting Office, "GAO Accounting Guide: Basic Topics Relating to Appropriations and Reimbursables", 1990.
64. Office of Management and Budget, Statement of Federal Financial Accounting Standards No. 1, "Accounting for Selected Assets and Liabilities", March 1993.
65. Office of Management and Budget, Statement of Federal Financial Accounting Standards No. 3, "Accounting for Inventory and Related Property", October 1993.
66. Office of Management and Budget, Statement of Federal Financial Accounting Standards No. 6, "Accounting for Plant, Property, & Equipment (PP&E)", November 1995.
67. Office of Management and Budget, Statement of Federal Financial Accounting Standards No. 5, "Accounting for Liabilities of the Federal Government", December 1995.
68. Office of Management and Budget, OMB Bulletin No. 97-01, "Form and Content of Agency Financial Statements", October, 1996.

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